

# **The National Sentinel Stroke Audit 2010 Round 7**

**National and Local Results for the Clinical Audit 2010**

**Generic Report**

**Prepared on behalf of the  
Intercollegiate Stroke Working Party**



**Royal College  
of Physicians**

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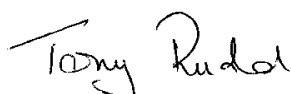
## Foreword

The Sentinel audit has been reporting in its current form for more than 12 years. It was one of the first audits internationally where it was possible to obtain a clear picture of how stroke care was being delivered in every corner of the country. Our methods have been widely borrowed, with Italy, Spain, Ireland and Australia now conducting similar national audits. The data have been a powerful lever for change. The National Audit Office used the information extensively when producing its seminal report in 2005 and each round of audit has resulted in stories of individual services reforming the way they delivered their care.

I think this report provides some very important messages. We have clearly seen dramatic improvements in the quality of stroke care over the last 12 years, notably the nearly universal use of stroke unit beds for our patients. While some countries probably deliver individual aspects of care such as thrombolysis services better than us there can be few places in the world where the whole pathway from prevention to longer term care is provided so comprehensively. That is not to say that there are not plenty of areas that need improvement and this report highlights these. Also, there are still some hospitals that seem unable to respond to the needs of their patients. For these help is available and we would encourage them to seek a peer review from the stroke programme at the RCP.

But time for change has come. We will no longer be contacting you every 2 years to report data on a cohort of your admissions. From 2012 onwards it is likely that there will be a national prospective audit of stroke that will in some ways be similar to MINAP, the national audit of myocardial infarction. It is hoped that there will be a minimum dataset that will be collected for every patient that will provide all the relevant agencies with the data they need to commission and monitor the quality of stroke care provided both in hospital and subsequently in the community. It will encompass all the items of information that are currently required by bodies such as NICE, the Stroke Improvement Programme, Department of Health Vital Signs and the NHS Outcomes Framework. Those of you already contributing data to SINAP will be aware of how valuable prospective data can be, but also be aware of the burden that such continuous data collection can impose. Whoever ends up running the audit will, I am sure, do all they can to keep the data items to a minimum and ensure that the data collection system is as user friendly as possible, wherever available using existing data sources.

Running the Sentinel audit has been a team effort, involving some of the brightest and hardest working individuals I have had the pleasure to work with during my career. Penny Irwin coordinated the work for the early rounds and set the standards for everyone to follow. Alex Hoffman has led and developed the stroke programme superbly over the last 10 years and we have been very fortunate to have Uta Henssge working with us on the audit and peer review programmes over the last couple of years. I am delighted that Geoff Cloud has joined the team to provide more clinical guidance and support to the stroke programme and I am sure he will play a key role in shaping the future of stroke quality improvement over coming years.



Prof Tony Rudd

## **Executive summary**

11,353 patients were included in the audit with 100% of trusts treating acute stroke patients in England, Wales and Northern Ireland contributing data.

### **Pre-stroke characteristics and primary prevention**

Vascular risk factors were present in 81% of patients with previous stroke/TIA (29%) and hypertension (57%) being the most frequent conditions. Only 27% of patients known to have atrial fibrillation (AF) prior to admission with their stroke (21%) were on anticoagulants.

### **Access to stroke specialist care**

#### **Pre-hospital care**

Ambulance services are still not routinely using a validated tool to screen for stroke. Joined up care appears inadequate with one in three patients not having an ambulance record available in their hospital records.

#### **Delay from stroke to hospital admission**

56% of the patients for whom the time of onset of symptoms is known (60%) were admitted within 3 hours and 64% within 4 hours. These figures are slightly worse than in 2008 and suggest that the FAST advertising campaign has not had a dramatic effect on the behaviour of patients and the public after acute stroke.

#### **Location to which the patient was initially admitted**

The majority of patients (57%) go to general assessment units where stroke specialist care is often not delivered effectively e.g. swallow screening is not carried out quickly enough and therefore puts patients at risk of later complications. Only 36% are admitted directly to a stroke unit with 38% reaching the stroke unit within 4 hours.

#### **Access to a stroke unit**

88% of patients spent at least some time on a stroke unit which is excellent progress. Although about two thirds of the patients spend more than 90% of their hospital stay in a stroke unit there are still too many patients spending the majority of time on a general assessment unit. Even if these patients are discharged quickly, they should still be directly admitted to a stroke unit in order to receive the best quality of stroke care both acutely and in the longer term.

#### **Acute interventions**

82% of eligible patients received a brain scan within 24 hours of stroke. However, only a quarter are scanned within 3 hours of stroke.

5% of all patients in the audit sample received thrombolysis which is a major increase since the last audit in 2008 (1.8%) but still only about a third of the patients who should receive it.

Infection rates as a complication of acute stroke have decreased by 3% to 13% (pneumonia) and 6% (urinary tract infection) respectively. This may be because of better access to specialist stroke units.

### **Patients suffering a stroke when already an inpatient**

5% of all patients were inpatients at the time of their stroke. Performance on several of the nine key indicators is still worse for patients who have a stroke while already in hospital compared to those patients who have their stroke at home. It seems bizarre that patients already in a hospital should end up with worse care than patients who have their stroke at home and this needs to be addressed urgently.

### **Stroke Research**

The proportion of patients entered into research trials remains constant at 7% of admissions.

### **Outcomes**

Outcomes seem to be improving as the quality of care improves with a reduced 30-day mortality of 17% (2010) compared to 20% (2008).

The institutionalisation rate has remained fairly constant at 10%. However, it is concerning that more than one in 10 patients are transferred to nursing home care with little or no hope of receiving ongoing specialist stroke care and rehabilitation within 2 weeks of suffering a stroke. This practice can rarely, if ever, be justified for patients with new stroke.

There has been a significant reduction in hospital length of stay in the last 2 years from a mean 23.7 days (median 12 days) in 2008 to a mean 19.5 days (median 9 days) in 2010. Patients admitted to a stroke unit within 4 hours have a median (IQR) length of stay of 9 (4-24) days compared to 12 (5-31) days for those who were not directly admitted to a stroke unit. There has been no change in discharge disability scores over the last 2 years. It is hoped that patients are not being sent into the community without having had sufficient opportunity in hospital or to have adequate access to ongoing specialist rehabilitation in the community.

### **Multidisciplinary working**

We are performing better overall in terms of assessment by the multidisciplinary team. However, there are still concerns about the ease of access to social workers and access to occupational therapy is slower for many patients than ideal.

Major improvements have been made over recent years in screening for cognitive, mood and nutritional problems although it is still difficult to understand why not every patient is weighed at least once during their admission.



Multidisciplinary care planning has improved and 78% of patients now have evidence of team goals being set within 5 days of admission. 95% of patients are receiving appropriate nutrition within 24 hours of admission.

In one in 10 cases of urinary catheterisation no clear rationale for the insertion is documented. Management of urinary continence remains an area where major improvements are needed. This is one of the most common and distressing symptoms caused by stroke and yet less than two thirds of incontinent patients have any management plan documented.

### **Therapy provision**

Statement 7 of the NICE Quality Standard for stroke states that all patients, where they can tolerate it, should receive at least 45 minutes of each of the relevant therapies on at least 5 days a week. This is being measured for the first time in the audit. The message is our patients are not receiving enough face to face therapy despite the UK having high therapy staffing levels. There are two issues arising. Firstly patients are deemed capable of tolerating 45 minutes of each therapy per day on only a small proportion of their in-hospital stay, which suggests that our therapists underestimate their patient's ability to participate in therapy. Secondly, even when the patients are deemed suitable for 45 minutes they often do not receive this amount – about a third for physiotherapy and occupational therapy and only 18% for speech and language therapy. A major review of therapy working practices is needed.

### **Communication with Patients and Carers**

There have been small improvements in the area of communication with patients but there is still plenty of room to do better. One in five stroke patients are still not having a documented discussion about their diagnosis, and one in three cases about the prognosis. Driving advice (a medico-legal requirement) was documented in 65% of appropriate patients. Also, help and support given to carers needs to be focussed on in the coming year.

### **Planning for Discharge**

A quarter of patients are not given a follow-up appointment within 6 weeks of discharge. There is nearly always a need for patients and their carers to gain further information and support from specialists after discharge.

Only 36% of appropriate patients had access to early supported discharge (ESD). This shows that ESD as a service is being implemented very slowly. It is one of the areas being addressed by the Stroke Improvement Programme with their '*Accelerated Stroke Improvement measures*'<sup>1</sup>. It is both clinically and cost effective and at a time when economies need to be made in the NHS it would seem that this would be an ideal way of reducing costs without compromising on quality.

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<sup>1</sup> <http://www.improvement.nhs.uk/stroke/AcceleratingStrokeImprovement/tabid/134/Default.aspx>

## **Preventing a second stroke**

There are slightly fewer smokers (17%) in this cohort while excess alcohol consumption has risen from 6% to 8%. Just over half of patients have documented evidence of such risk factors being discussed.

It is disappointing that so few patients with AF and stroke are prescribed warfarin or have a plan to start warfarin by discharge. Given the strength of evidence in favour of warfarin as the secondary prevention treatment of choice for these patients there still seems to be an inexplicable reluctance to follow this guidance. The total of 39% of patients in AF either on warfarin or with a plan to start anticoagulation after stroke in this round of the audit is some way short of the 60% set by the Department of Health (DoH) in England as part of the Accelerated Stroke Improvement measures to be achieved by April 2011.

The rate of prescribing antihypertensives has dropped since 2008. It is uncertain why this reduction should be, given that lowering blood pressure after stroke is the single most effective and widely applicable intervention to reduce the chance of recurrent stroke. Most patients who would benefit from statin and or antiplatelet drugs appear to be prescribed one.

## **Changes over time and Bundles of Care**

Compliance has increased for all standards between 2004 and 2010 indicative of the huge improvements made in stroke care. There remain many areas where further improvements are needed. This is highlighted by the low compliance shown with the bundles of standards that we have used. Very few patients receive all the key items of care that would ensure that they stand the best chance of a good recovery from their stroke.

## **Regional differences**

The casemix is remarkably similar between the three countries. The length of stay to discharge or death is however, very different between Wales and England. This is likely to be due to differences in access to specialist stroke unit care which was seen in the Sentinel Organisational Audit 2010. Access to stroke unit care and occupational therapy are particular challenges in Wales whilst Northern Ireland struggles with brain imaging within 24 hours of stroke.

Wales has made considerable improvements since 2006 again demonstrating the value of a National Strategy and explicit support from central government for service improvement.

Although there has been improvement in the total score for Northern Ireland, dips in swallow screening and mood assessment from 2008 are difficult to explain. Unless this changes it is likely that the gap between England and Northern Ireland will increase and Wales will overtake Northern Ireland in terms of delivering high quality acute stroke care.

## **Top Ten Areas with recommendations for change**

1. All patients with ischaemic stroke in AF should be considered for anticoagulation and a clear reason documented where a decision is made not to treat.
2. Every area should institute formal arrangements to link the pre-hospital information held by paramedics with the hospital record.
3. All patients should be directly admitted to a stroke unit equipped to manage acute stroke patients and have access to a stroke service that can deliver thrombolysis safely and effectively.
4. No patient should be admitted permanently to a care home for the first time after a stroke without a comprehensive and intensive attempt to rehabilitate the patient in hospital. This is impossible to achieve in less than a few weeks.
5. Therapy time should be spent delivering direct patient care and administrative work should be kept to a minimum.
6. All patients should have a scan of their brain within 24 hours of admission.
7. All units should have arrangements to have their patients assessed in a timely fashion by a social worker and no patient should ever have to wait more than 7 days after referral.
8. All patients with continence problems should have a documented plan with evidence that it has been implemented in their case notes.
9. Stroke specialist early supported discharge should be made available in all districts.
10. All patients should have documented evidence that there has been communication about stroke diagnosis, prognosis and management of modifiable lifestyle risk factors. If patients drive, then the impact of their stroke on their driving ability must also be discussed and documented.

## INTRODUCTION

### Background

The National Sentinel Stroke Audit has taken place on a 2-year cycle since 1998 and is now in its 7<sup>th</sup> round. The only exception was in 2009, when an interim organisational audit was funded by the National Audit Office. As in the previous rounds of the audit the results for the organisational audit are being published separately from the clinical audit. The report for the organisational audit of this round has been published in August 2010.

### Aims of the audit

1. To audit against the national guidelines for stroke<sup>2</sup> and the National Stroke Strategy
2. To enable Trusts to benchmark the quality of their stroke services nationally and regionally
3. To measure the rate of changes in stroke service organisation and quality of care for stroke patients since the 6<sup>th</sup> Round of the audit in 2008
4. To measure the extent to which the recommendations made in the clinical report of the National Sentinel Stroke Audit 2008 have been implemented
5. To help improving quality of stroke services and engaging of clinicians in the process
6. To measure against standards given in the NICE Quality Standard for stroke<sup>3</sup>

### Organisation of the Audit

This audit was funded by the Healthcare Quality Improvement Partnership (HQIP) and run by the Clinical Standards Department of the Royal College of Physicians, London. The audit was guided by a multidisciplinary steering group responsible for the Stroke Programme – the Intercollegiate Stroke Working Party (ICSWP) (Appendix 1). The ICSWP oversaw the preparation, conduct, analysis and reporting of the audit. Data was collected within trusts using a standardised method. This audit was overseen at a trust level by a lead clinician for stroke who is responsible for the quality of data supplied.

### Availability of this report in the public domain

Site results will be made available to the Department of Health in England, the Welsh Assembly Government and the Department of Health, Social Services and Public Safety in Northern Ireland. Results will also be presented to Strategic Health Authorities and the Stroke Improvement Networks. Named hospital results will be available to participants and the organisations mentioned above in March 2011. A summary report will be sent to the trust boards in May 2011. Data will be shared with the Care Quality Commission for their 'Quality and Risk Profiles'.

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<sup>2</sup> Intercollegiate Stroke Working Party: *National clinical guideline for stroke*, 3<sup>rd</sup> edition. London: Royal College of Physicians, 2008. ; *Diagnosis and initial management of acute stroke and transient ischaemic attack (TIA)*. National Institute for Health and Clinical Excellence (NICE), 2008.

<sup>3</sup> <http://www.nice.org.uk/guidance/qualitystandards/stroke/strokequalitystandard.jsp>

## Evidence-based

The results from this clinical audit are based on information obtained retrospectively from patient records. They compare delivery of care with standards derived from systematically retrieved and critically appraised research evidence and agreed by experts in all disciplines involved in the management of stroke. The strength of evidence is outlined in the guidelines. All relevant evidence for the standards applied in the audit is available in the third edition of the National Clinical Guidelines for Stroke (2008) published by the Intercollegiate Stroke Working Party ([www.rcplondon.ac.uk](http://www.rcplondon.ac.uk)), the NICE (National Institute for Health and Clinical Excellence) Clinical Guideline ([www.nice.org.uk/CG68](http://www.nice.org.uk/CG68)), the National Stroke Strategy 2007 and the NICE Quality Standard for stroke. It is suggested that they are read in full for context.

## METHODS

### Proforma

The majority of questions have not changed compared to 2008. A new section on therapy provision has been introduced for the first time in this round to reflect the NICE Quality Standard. The full proforma of questions is shown in Appendix 2.

**No, but...answers:** The diversity of effects from a stroke creates difficulties for clinical management and for determining overall standards of care. For example if someone is unconscious after their stroke it would not be possible to test their walking or speech difficulties within the time frames normally required. The audit therefore designated specified circumstances where standards would not be applicable. The full wording of questions can be found in Appendix 2.

**Compliance rates:** The compliance rate is recorded as a percentage, with 100% being optimal. The denominators for the compliance rates are those cases for whom the standards applied, i.e. any *No, but...* exceptions have not been included in the calculations of compliance. See section 2.1 and 2.2 for rates of applicability and compliance respectively over the last four rounds of audit.

### Definition of a 'site'

Lead clinicians were asked to collect data on the basis of a unified service within a trust. For most trusts the 'site' was the trust. For some trusts there were several 'sites' each offering a distinct service.

### Eligibility and Recruitment

The eligibility criteria were tightened for this round of the audit. Only sites directly admitting acute stroke patients were eligible to participate. Sites providing rehabilitation only stroke care were advised to collaborate where possible with a local directly-admitting acute site. Sites were eligible if they had at least 20 cases in the 3 months period.

It should be noted that due to changes in eligibility and service reconfiguration within trusts the total number of sites decreased from 224 to 200 since the 2008 audit.

In all, data on 11,353 cases were received from 200 sites, within 158 Trusts representing 100% of eligible trusts.

All eligible trusts were kept informed of the proposed timetable for this 7<sup>th</sup> round. Changes in trust configuration and the details of the lead clinician and audit co-ordinator were updated regularly.

### **Selection criteria**

The audit sample consists of consecutive cases with a primary diagnosis of stroke (ICD 10 codes: I61, I63 and I64) admitted to hospitals between 1<sup>st</sup> April and 30<sup>th</sup> June 2010.

At registration for the audit sites were asked for their annual stroke admissions between 1<sup>st</sup> April 2008 and 31<sup>st</sup> March 2009. For hospitals admitting up to 600 stroke patients per year the maximum number of cases in the audit was 60. For sites admitting more than 600 stroke patients a year the sample was 10% of their annual admissions. This suggested maximum (target) has been introduced following feedback from larger sites.

### **Repatriated patients**

The model of centralised hyperacute stroke care has been developed in some parts of the country. In this model, early stroke care is provided in defined hyperacute centres and patients are usually repatriated to their local stroke unit within 72 hours of admission. Data for these patients were collected by a shared proforma to capture the stroke care pathway across the two hospitals involved.

### **Data collection tool**

A web-based tool was used to collect data from sites. This web tool included context specific online help including definitions and clarifications. Security and confidentiality was maintained by the use of site codes. Sites accessed the proforma using unique identifiers and passwords and data could be saved during as well as at the end of an input session.

Formal data collection was scheduled to take place between 1<sup>st</sup> October and 30<sup>th</sup> November 2010. However, the audit went live on 23<sup>rd</sup> September 2010. Each participating trust was provided with their login details and the help booklet. A telephone and email helpdesk was provided to answer any individual queries. Trusts were given time to check their data and therefore, the final record was submitted on 7<sup>th</sup> December 2010.

### **Data reliability**

Data are as reliable as in the last round. Further details can be found in Appendix 3.

## PRESENTATION OF RESULTS

Wherever possible the audit question numbers have been included in tables of results to facilitate reference to the actual question wording in the audit tool (Appendix 2). The summary of results has been presented in 3 ways during this report and the definitions are given below:

### Definitions

#### 1. Nine (9) key indicators of stroke care

Following the 3<sup>rd</sup> round of audit in 2002 a minimum dataset was selected to best represent the total clinical process for each hospital. Between 2006 and 2008 this was reduced to 9 key indicators in consultation with the Department of Health and the Healthcare Commission.

The 9 key indicators used in this report are as follows:

- Patients treated for 90% of stay in a Stroke Unit
- Screening for swallowing disorders within 24 hours of admission
- Brain scan within 24 hours of stroke
- Commenced aspirin by 48 hours of admission
- Physiotherapy assessment within first 72 hours of admission
- Assessment by an Occupational Therapist within 4 working days of admission
- Patient weighed at least once during admission
- Mood assessed by discharge
- Rehabilitation goals agreed by the multi-disciplinary team by discharge

### Key 12 indicators

For this round of the audit, we have added four additional indicators to the previous nine and removed one to increase the challenge for stroke services in providing high quality care. There is now a standard for swallowing assessment by a speech and language therapist, a standard for direct admission to a stroke unit, one for discussion with the patient about their diagnosis and rehabilitation goals being set by the team within 5 days of admission. This latter standard replaces the setting of rehabilitation goals by discharge.

Rates are used for comparative purposes within this report. Your key indicator scores can be found in chapter 1, section 15 of this report.

#### 2. Percentage of appropriate patients receiving all 9 and 12 key indicators

This “bundle” of indicators describes the percentage of patients receiving all 9 and 12 key standards nationally and within your trust.

**Your percentage of patients receiving all 9 and 12 indicators is presented in Section 15.2**

#### 3. Total Process Score

As in previous rounds the overall performance is assessed using a total score derived from 26 standards divided into six domains of care. Five of these domains are broadly similar to the domains used in previous rounds but the total process score now includes a sixth domain “acute care” which has not been included in the past.

## How the domains and total scores are derived

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<b>D1</b>	<b>Initial patient assessment (average of 4 standards)</b> <ul style="list-style-type: none"> <li>• Screening for swallowing 24 hours (Q3.3)</li> <li>• Visual fields (Q3.1i)</li> <li>• Sensory testing (Q3.1ii)</li> <li>• Brain scan within 24 hours of stroke (Q1.14iv)</li> </ul>
<b>D2</b>	<b>Multidisciplinary assessment (average of 5)</b> <ul style="list-style-type: none"> <li>• Swallowing assessment Speech &amp; Language Therapist within 72 hours (Q3.5)</li> <li>• Physiotherapy assessment within 72 hours (Q3.6)</li> <li>• Initial assessment of communication 7 days (Q4.1)</li> <li>• Occupational Therapy assessment within 4 working days (Q4.2)</li> <li>• Social work assessment within 7 days of referral (Q5.2)</li> </ul>
<b>D3</b>	<b>Screening &amp; Functional assessment (average of 4)</b> <ul style="list-style-type: none"> <li>• Patient weighed at least once during admission (Q5.1)</li> <li>• Evidence mood assessed (Q5.3)</li> <li>• Cognitive status assessed (Q5.4)</li> <li>• Screening for malnutrition (Q3.9)</li> </ul>
<b>D4</b>	<b>Care planning (average of 3)</b> <ul style="list-style-type: none"> <li>• Evidence of rehabilitation goals (Q4.5i)</li> <li>• Plan to promote urinary continence (Q4.4)</li> <li>• Receiving nutrition within 72 hours (Q3.8)</li> </ul>
<b>D5</b>	<b>Communication with patients &amp; carers (average of 5)</b> <ul style="list-style-type: none"> <li>• Discussion with patient about diagnosis (Q7.1i)</li> <li>• Carer needs for support assessed separately (Q7.3)</li> <li>• Skills taught to care for patient at home (Q7.4)</li> <li>• Follow up appointment at 6 weeks (Q7.7)</li> <li>• Driving Advice (Q7.2)</li> </ul>
<b>D6</b>	<b>Acute care (average of 5)</b> <ul style="list-style-type: none"> <li>• Aspirin within 48 hours of stroke (Q3.4)</li> <li>• 90% of stay in a Stroke Unit (calculated)</li> <li>• Admitted to an acute or combined Stroke Unit within 4 hours (Q1.10)</li> <li>• Receiving fluids within 24 hours (Q3.7)</li> <li>• Receiving thrombolysis, if eligible under NINDS (calculated from 3.2 and others)</li> </ul>

Total process score (D1+D2+D3+D4+D5+D6)/6

**Your total process score and domains can be found in section 15.4**



## Chapter 1 Individual site results compared to national sample National Sentinel Stroke Audit 2010 Round 7

### Introduction

This chapter of the report should be read in conjunction with chapters three and four which cover the national results and the appendices. It shows your site results compared with the national statistics, and is divided in 15 sections.

The patient clinico-demographics are presented first so that you can compare the characteristics of your own sample with the national profile.

### Number of sites and patients in the 2010 audit

200 sites from 158 trusts in England, Wales and Northern Ireland submitted data which represents 100% participation of eligible trusts in the audit. The number of sites differs from the 201 sites (159 trusts) which participated in the organisational audit in this round. However, one trust no longer admits acute stroke patients.

NUMBER OF PATIENTS		National (200 sites)	<b>Your site</b>
Number of cases	total	11353	
	median (IQR)	60 (53–60)	
Sites with more than 50 cases		78% (155)	

The individual cohorts varied and were based on the number of stroke admissions between 1<sup>st</sup> April 2008 and 31<sup>st</sup> March 2009. Sites which admitted more than 600 patients and were not classified as a hyperacute centre were asked to submit 10% of their annual admissions. **Your site** was asked to submit data for **X** cases. 40 sites (20%) submitted less than 75% of the recommended number of cases, and 52 sites (26%) submitted less than 90% of the recommended number of cases.

**Your site** submitted 75% of the recommended number of cases

Inter-rater reliability was analysed on 594 duplicate cases from 130/200 sites (65%). We have included **X case(s)** from **your site**.

### Transferred patients from hyperacute centres

The provision of hyperacute stroke services has changed in some parts of the country. Certain centres provide all or the majority of hyperacute stroke care for other hospitals before repatriating these patients. To reflect these arrangements, data for these transferred patients were collected by the two sites involved. The results for these cases are assigned to the 2<sup>nd</sup> hospital as they spent the majority of their stay there. However, hyperacute centres gave a lot of effort and time to support data collection for these patients.

In total 249/11,353 were transferred patients for whom the data collection was shared. It should be noted that 10% of proformas started by the hyperacute site were not completed by the 2<sup>nd</sup> hospital.

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**HYPERACUTE TRANSFERS**
[Your site](#)


---

You provided hyperacute stroke care for (an)other site(s)

Number of patients transferred **to** (an)other site(s)

(An)other site(s) provided hyperacute stroke care for your site

---

Number of patients transferred **from** (an)other site(s)

---

## Data Collectors

DATA COLLECTORS	National (200 sites)
Medicine	40% (4496)
Nursing	48% (5457)
Clinical Audit	18% (2014)
Therapy	25% (2784)
Others	11% (1199)

For 27% (3087) of cases there was collaboration between disciplines in data entry. There has been a progressive movement towards clinicians undertaking the data entry with a particular increase in the participation by therapists. This is a positive development as much of the learning about audit is gained by the actual process of gathering and entering the data.

## Denominators

DENOMINATORS	National (11353 patients)	<a href="#">Your site</a>
All patients	11353	
Admitted to a stroke unit	9978	
Patients discharged alive	9164	

The results given are all in relation to the number of known responses. The non-response rates with web-entry were so low that we have stopped reporting them within the tables. The % of cases for which a standard applied were computed after excluding any non-response.

## Section 1 Clinico-demographic features of patients

### Introduction

This section summarises a national cross-section of stroke patients in terms of a wide range of characteristics. It confirms the representativeness of the audit sample with epidemiological studies and between the cycles of audit.

## 1.1 Patient Demographics

*Comment: There has been little change in the demographics of the patients whose data were submitted for this audit compared to previous rounds.*

GENDER	National (11353 patients)	<a href="#">Your site</a>
Male	49% (5520)	
Female	51% (5833)	

AGE (in years)	National (11353 patients)	<a href="#">Your site</a>
Male (5520 patients)	Median 74.6 yr	
	Mean 72.6 yr	
Female (5833 patients)	Median 81.4 yr	
	Mean 78.8 yr	

## CASEMIX

*Comment: The case mix (stroke type, deficits on admission, including worst level of consciousness, and pre-morbid disability) for this cohort of patients is very similar to previous rounds of audit making comparisons of outcomes possible.*

## 1.2 Impairments resulting from the Stroke

Q2.5 IMPAIRMENTS	National (n=11353)	<a href="#">Your site</a>
Dysphasia	38% (4280)	
Not known for 9% (993)		
Dysarthria	40% (4567)	
Not known for 11% (1261)		
Motor deficits	76% (8603)	
Not known for 4% (463)		

## 1.3 Stroke type as shown by scan

Q1.15 STROKE TYPE	National (n=11135*)	<a href="#">Your site</a>
Ischaemic/Infarct	88% (9806)	
Primary Intra-cerebral Haemorrhage	12% (1329)	

\* 218 patients had no brain scan after stroke

## 1.4 Conscious level in first 24 hours

Q2.8 WORST LEVEL OF CONSCIOUSNESS IN FIRST 24 HOURS	National (n=11353)	<a href="#">Your site</a>
• Fully conscious	69% (7780)	
• Drowsy	16% (1810)	
• Semi - conscious	7% (787)	
• Unconscious	9% (976)	

## 1.5 Level of independence before stroke

	National (n= 11352)	<a href="#">Your site</a>
Q2.4 Was the patient independent in everyday activities before the stroke? (eg Barthel 19-20 or Rankin <3)	76% (8650)	

## 1.6 Co-Morbidities, Stroke Risk Factors, Medication Pre-Admission

CO-MORBIDITY PRIOR TO ADMISSION	National (n= 11353)	<a href="#">Your site</a>
Q2.1 Are there any of the following co-morbidities?	81% (9156)	
• Atrial Fibrillation (AF)	21% (2440)	
• Previous stroke/Transient Ischaemic Attack (TIA)	29% (3321)	
• Diabetes Mellitus	18% (1990)	
• Hyperlipidaemia	26% (2897)	
• Hypertension	57% (6441)	
• Myocardial Infarction (MI) or angina	18% (2003)	
• Valvular heart disease	3% (386)	
None of the above	19% (2197)	
1 of the above	28% (3117)	
2 of the above	27% (3056)	
3 or more of the above	26% (2983)	

RISK FACTORS BY AGE	<75 years	75+ years
<i>Number of risk factors</i>		
• 1	27% (1210)	28% (1907)
• 2	23% (1086)	29% (1988)
• 3	23% (1066)	28% (1917)
• no risk factors	27% (1221)	14% (976)
<i>Smoking / alcohol (Q2.2)</i>		
Yes	37% (1695)	9% (601)

Q2.3 MEDICATION PRE-ADMISSION	National (n=11353)	<a href="#">Your site</a>
Any lipid lowering medication	41% (4688)	
Warfarin	8% (911)	
Anti-platelet medication	43% (4936)	

*Comment: 81% of patients admitted with stroke have a history of known vascular risk factors, with 29% having had previous stroke or TIA and 57% with hypertension. Only 661/2440 (27%) who were recorded as having atrial fibrillation (AF) prior to stroke were taking warfarin which indicates again the failure to provide large numbers of people at risk of stroke because of AF with effective prevention. Patients are dying and having disabling strokes because of our failure to anticoagulate people appropriately. Predictably the prevalence of risk factors is much higher in the older patients (75+ years) except for lower rates of smoking and alcohol consumption. Use of lipid lowering therapy has increased dramatically with 41% admitted on lipid lowering medication.*

## Section 2 Pre-hospital care

### NICE Guideline Recommendation

**In people with sudden onset of neurological symptoms a validated tool, such as FAST (Face Arm Speech Test), should be used outside hospital to screen for a diagnosis of stroke or TIA.**

### 2.1 Ambulance records

AMBULANCE RECORDS Q1.7	National (n= 9078)*	Your site n= *
Do you have a copy of the ambulance clinicians' patient records on file for this patient?	64% (5846)	
• Did this include a validated tool to determine the diagnosis of stroke? (Q1.7i)	83% (4852)	

\* Patients arriving by ambulance

*Comment: It is surprising that ambulance services are still not routinely using a validated tool such as FAST to screen for stroke. There remain issues with joined up care with one in three patients not having an ambulance record available in the hospital notes.*

### 2.2 Patients having stroke when already an inpatient

INPATIENTS	National (n= 11353)	Your site
QB4 Patient already inpatient at time of stroke	5% (549)	

Individual sites will vary in their percentage result by chance, and the data do not suggest any outliers. The median site percentage is 5% with IQR 2-7%. If your result differs significantly from this, you may wish to investigate your data further and see how your performance varies for these patients compared to those not already an inpatient on, for example, delay to brain scan.

### The nine key indicators for inpatients at time of stroke and patients admitted after stroke

COMPLIANCE WITH EACH INDICATOR FOR APPLICABLE PATIENTS		Already an inpatient	Admitted after stroke
Q1.11	Patients treated for 90% of stay* in a Stroke Unit	42% (181/436)	61% (5079/8344)
Q3.3	Screened for swallowing disorders within first 24 hours of admission	73% (322/440)	84% (7938/9456)
Q1.14iv	Brain scan within 24 hours of stroke	79% (413/522)	70% (7398/10627)
Q3.4	Commenced aspirin by 48 hours after stroke	92% (393/428)	93% (8209/8867)
Q3.6	Physiotherapy assessment within first 72 hours of admission	85% (385/451)	92% (8466/9242)
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	69% (280/404)	84% (7004/8331)
Q5.1	Weighed at least once during admission	91% (432/477)	85% (8215/9657)
Q5.3	Mood assessed by discharge	81% (340/420)	80% (6691/8385)
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	66% (228/384)	79% (5793/7372)

\* Time spent in hospital prior to stroke is not included.

*Comment: Performance on several of the nine key indicators is worse for patients who have a stroke while already in hospital. This is a pattern that has been shown in previous audits, particularly the failure to access stroke unit care. Rapid recognition and access to specialist stroke care are vital for all patients regardless of when or where the stroke occurs. Patients already in a hospital should not end up with worse care than patients who have their stroke at home.*

## 2.3 Delay from stroke to hospital admission

TIMINGS	National	
	N	%
DATE OF STROKE		
• Known – precise	9157	81%
• Known – estimated	2193	19%
• Unknown	3	0.0%
TIME OF STROKE		
• Known – precise	4396	39%
• Known – estimated	2472	22%
• Unknown	2289	20%
• Stroke occurred during sleep	859	8%
DATE OF ADMISSION		
• Known	11353	100%
• Unknown	0	0.0%
TIME OF ADMISSION		
• Known	11175	98%
• Unknown	178	2%

### Denominator

Patients who were inpatients at the time of stroke are excluded from the denominator for these items. A small proportion of cases had contradictory data about admission and stroke and these are also set aside from further analysis on delays to admission. There are 143 of these where both times are known, 14 where the stroke date is estimated, and 22 where one or more time is unknown.

Time from *stroke to admission* is thus calculated in three ways:

- in hours if both times (precise or estimate) are available (n=6354)
- in days if one or both times is unknown (n=2215)
- in days if the stroke date is estimated (n=2053)

The **denominator** for time from stroke to admission is **10622** patients.

### Admission within 3 hours where both times are known in hours

Time from STROKE to ADMISSION in HOURS*:	National		Your site
Known for: 6354	N	%	Both times known for X patients
Within <b>3 hrs</b>	3567	56%	
Within <b>24 hrs</b>	5987	94%	
1 hour or less	1040	16%	
61 minutes to 2 hours	1738	27%	
121 minutes to 3 hours	789	12%	
181 minutes to 4 hours	517	8%	
241 minutes to 12 hours	1459	23%	
721 minutes to 24 hours	444	7%	
1440 minutes to 48 hours	248	4%	
Over 48 hours	119	2%	

\* In this round of the audit we asked if the time of stroke was precise or a best estimate and both times have been included in the denominator.

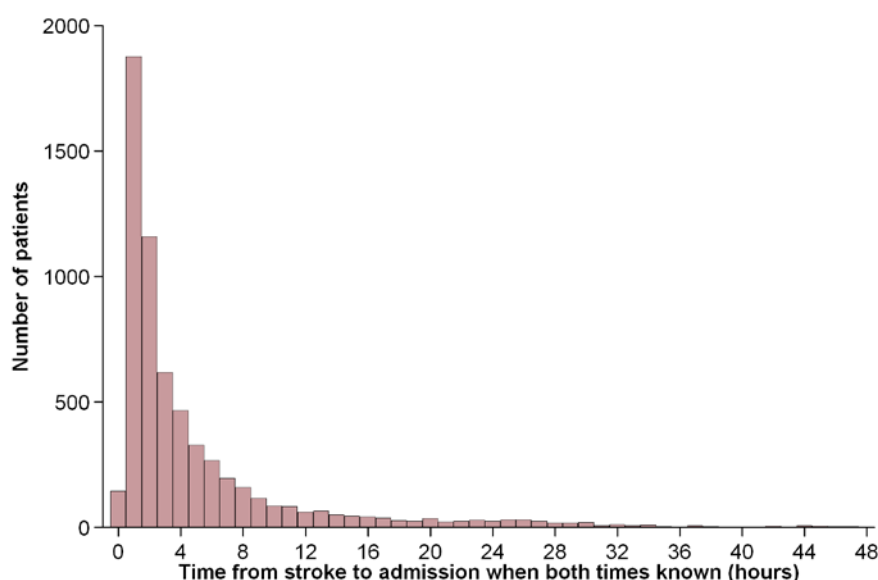
### Admission within 24 hours

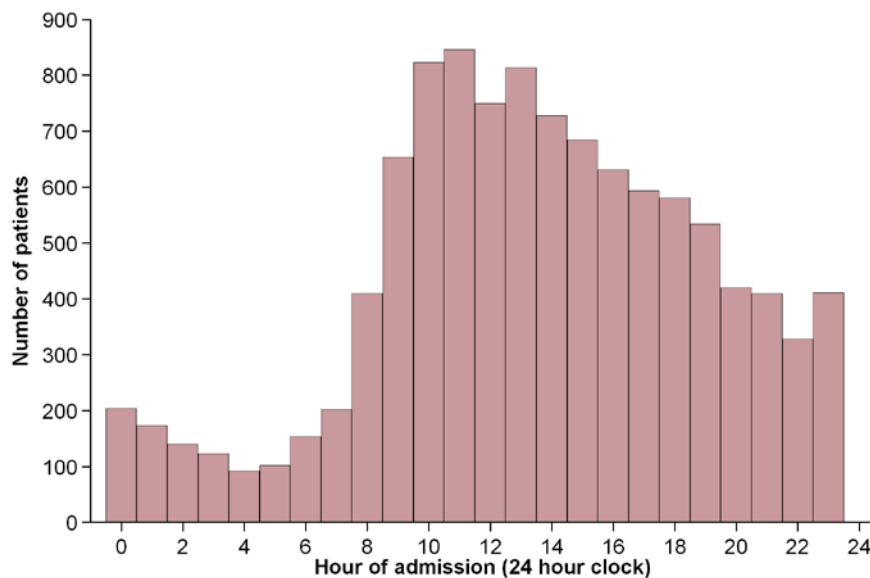
88% (9334/10622) of patients were admitted within 24 hours. This result includes benefit of the doubt for 657 patients admitted the following day when times were unknown, and in rounding down to 24 hours when times to the minute were known. Reversing this benefit of the doubt would indicate that 82% were admitted within 24 hours.

### Admission within 72 hours

97% (10277/10622) were admitted within 72 hours of the stroke, with this result including benefit of the doubt for 133 patients.

*Comment: For 60% of patients admitted to hospital post stroke the time of onset of symptoms is known precisely or as a best estimate. 56% of those patients were admitted within 3 hours and 64% within 4 hours. These figures are slightly worse than in 2008 where 60% of patients were admitted within 3 hours and suggest that the FAST advertising campaign has not had a dramatic effect on the behaviour of patients and the public after acute stroke.*





## Section 3 Organisation of Care in Hospital

### **NICE Guideline Recommendation**

**All people with suspected stroke should be admitted directly to a specialist acute stroke unit following initial assessment either from the community or Accident & Emergency department.**

### 3.1 Location to which the patient was initially admitted

Q1.8 WHERE WAS THE PATIENT INITIALLY ADMITTED TO?	National (n= 11353)	Your site
Admissions / Medical assessment unit / Clinical decisions unit	57% (6473)	
Coronary care unit	1% (125)	
Intensive care unit / High dependency unit	1% (158)	
Acute / Combined stroke unit	36% (4126)	
Other ward	4% (471)	

There are 196 sites where patients were admitted to a general assessment unit.

In the organisational audit 2010 we have asked if there are ever stroke patients in general assessment/decision beds. The national result and your answer are shown in the table below.

OA: ADMISSION AS GIVEN IN THE ORGANISATIONAL AUDIT 2010*	National	Your site
• Are there ever stroke patients in general assessment / decision beds e.g. MAU	86% (171/200)	

\* The organisational audit outlined the service as of 1<sup>st</sup> April 2010.

There were 313 patients, from 25 sites, who were initially admitted to a MAU, despite their site saying they never had stroke patients on this type of ward. **Your site was/was not** one of these sites.



### 3.2 Admission to an acute or combined stroke unit within 4 hours

	% applicable		% compliance	
	National	Your site	National	Your site
Q1.10 Admitted to an acute or combined stroke unit within 4 hours of arrival at hospital	99% (11195)		38% (4283)	

COMPARISON OF EARLY KEY INTERVENTIONS*	General assessment unit	Acute/Combined stroke unit
Fluids within 24 hours	99%	99%
Nutrition within 72 hours	95%	95%
Swallow screening within 4 hours	46%	72%
Swallow screening within 24 hours	77%	93%
Brain scan	98%	99%

\* compliance = % of applicable patients

*Comment: The majority of patients are still initially admitted to general assessment units where stroke specialist care is often not delivered as effectively as on stroke units. It is very disappointing that only 36% of patients are admitted directly to an acute or combined stroke unit and only 38% within 4 hours of arrival in hospital despite the strong recommendations that this should occur in both the National Stroke Strategy and the NICE Guidelines on Acute Stroke and TIA. Although the above table suggests that some of the key interventions such as provision of fluids, nutrition and brain scanning are performed as well for patients admitted to medical assessment units it is concerning that swallow screening is less frequently performed. This screening is essential to lower the risk for respiratory infections.*

### 3.3 Location of the majority of inpatient stay if less than 90% on stroke unit

	National	Your site
Q1.11 Patient spent 90% of their stay on a stroke unit?	70% (7941)	
<b>If NO</b> (n= 3412): Where did the patient spend over 50% of their stay? (Q1.11)		
• Admissions / Medical assessment unit	23% (784)	
• Coronary care unit/ Intensive care unit	4% (141)	
• General/ geriatric ward	22% (764)	
• Stroke unit of any type (ie acute, rehab or combined)	41% (1405)	
• Generic rehabilitation unit (ie not a stroke rehab unit)	3% (88)	
• Other Ward	7% (230)	

*Comment: There are still too many patients spending too much time on an admissions/ assessment unit. Even if these are patients who are discharged from hospital very quickly, they should still be directly admitted to a stroke unit in order to receive the best quality of stroke care both acutely and in the longer term.*

### 3.4 Hospital Length of Stay (LOS)

The date of discharge was defined as either from initial acute stay or following inpatient rehabilitation (either in-house or at a collaborating centre) or from hospital to home/residential care. For cases transferred from acute care to rehabilitation units locally auditors were advised to use the date of discharge from the inpatient rehabilitation facility if the whole episode of care was included. Auditors were asked to collect data only on the first inpatient episode if a patient was re-admitted. The local results shown under “Your site” should therefore be interpreted in the light of your service configuration and patient pathway.

For 11305/11353 (99.6%) of patients in the audit, it was possible to calculate their length of stay either from admission to discharge or admission to death. 48/11353 patients (0.4%) were still in hospital at the time of audit.

LENGTH OF STAY to DISCHARGE OR DEATH	National	<a href="#">Your site</a>
Known	11305	
Median (IQR)	9 (4-25)	
Mean	19.5	
14+ days	40%	

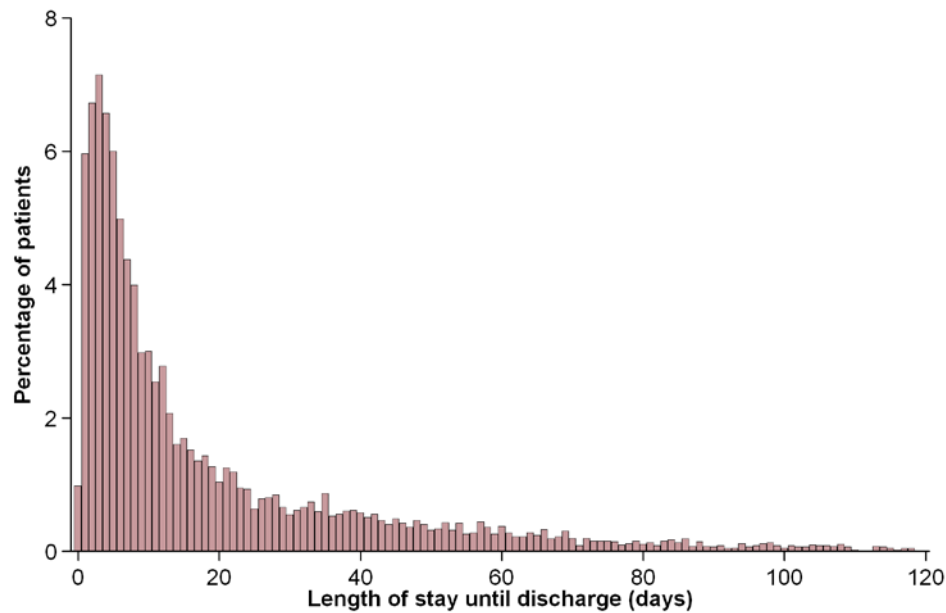
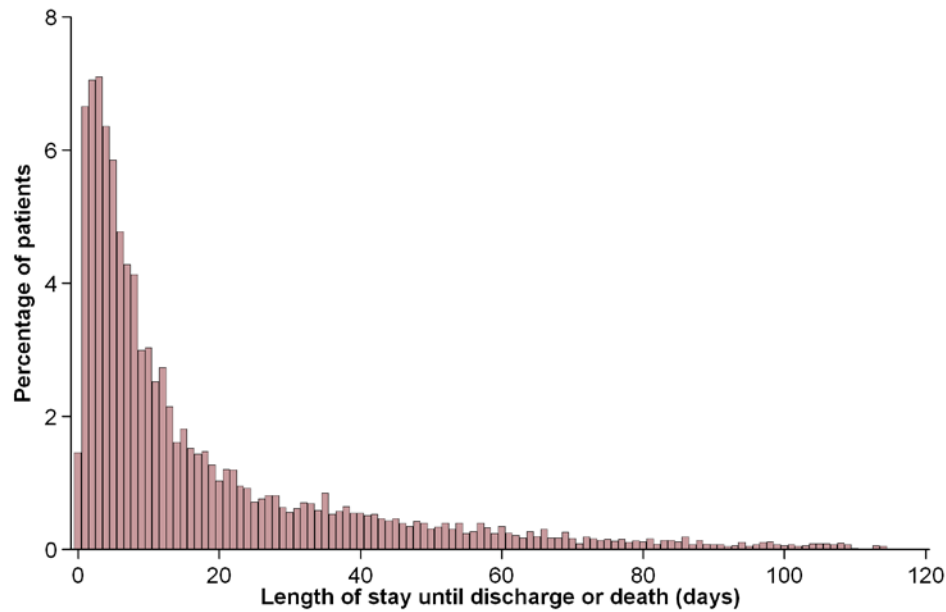
LENGTH OF STAY for patients who were DISCHARGED ALIVE	National	<a href="#">Your site</a>
Known for	9164	
Median (IQR) in days	10 (4-26)	
Mean in days	20.4	
14+ days	41%	

LENGTH OF STAY for patients who DIED IN HOSPITAL	National	<a href="#">Your site</a>
Known for	2141	
Median (IQR) in days	8 (3-20)	
Mean in days	15.9	
14+ days	36%	

*Comment: There has been a big reduction in length of stay over the last 2 years falling from a mean of 23.7 days and median of 12 days to a mean of 19.5 days and a median of 9 days. It would appear from the mortality and discharge disability data that this has been achieved without deterioration in the quality of care. This information is therefore to be welcomed as it is important that resources are used as efficiently as possible. However, as the organisational audit report of 2010 showed less than ideal post hospital care, there remains a concern that patients are being sent home earlier to inadequate rehabilitation facilities in the community. One of the key areas for improvement in care for the future must be community rehabilitation.*

The graphs below show the distribution of the duration of in-hospital stay until discharge or death and until discharge only.



## Section 4 Outcomes (reflecting casemix)

### 4.1 Mortality

For 475/11353 (4%) patients it was not known whether the patient was alive at 30 days after stroke. For the remainder, 17% were known to have died in 30 days.

MORTALITY	National N	Your site Known for
Patient died within		
• 7 days of stroke (calculated)	986 / 11353	9%
• 30 days of stroke Q1.6	1870 / 10878	17%
• Died in hospital Q1.3	2141 / 11353	19%

*Comment: 30-day mortality has fallen from 20% to 17% between 2008 and 2010. The case mix does not appear to have changed significantly which suggests that outcomes are indeed improving as the quality of care improves.*

### 4.2 Transfer to a residential or care home for the first time

Q2.12 PATIENT NEWLY INSTITUTIONALISED	National N	Your site (destination known for X patients) N
(destination known for 8880 / 9164 patients discharged alive)	915	10%

Newly institutionalised at discharge			
Length of stay		N	
0-2 days	(n=1240)	12	1%
3-7 days	(n=2637)	30	1%
8-14 days	(n=1720)	62	4%
>14 days	(n=3567)	811	23%

*Comment: It can rarely, if ever, be justified for patients with new stroke to be transferred to nursing home care with little or no hope of receiving ongoing specialist stroke care and rehabilitation within 2 weeks of suffering a stroke. The fact that this happens in more than one in 10 cases of newly institutionalised stroke patients as means of facilitating discharge is of major concern. The overall institutionalisation rate has remained fairly constant (11% in 2008 and 10% in 2010).*

### 4.3 Discharge Disability (Barthel score)

Q2.11 FUNCTION LEVEL AT DISCHARGE (BARTHEL) Known for 8754 / 9164 patients discharged alive	National	Your site (Known for X)
Independent (20)	42% (3640)	
Mild (15-19)	22% (1941)	
Moderate (10-14)	14% (1256)	
Severe (5-9)	10% (862)	
Very Severe (0-4)	12% (1055)	

Completion rate was 96% (8754/9164) at discharge which is similar to the excellent rate in 2008. For Barthel score interpretation see proforma in Appendix 2.

There are 8753 patients in whom Barthel at discharge *and* length of stay is known.

Length of stay	Barthel score on discharge				
	Independent (20)	Mild (15-19)	Moderate (10-14)	Severe (5-9)	Very severe (0-4)
0-2 days (n=1174)	80% (940)	12% (145)	2% (29)	2% (22)	3% (38)
3-7 days (n=2513)	64% (1598)	21% (528)	7% (186)	4% (102)	4% (99)
8-14 days (n=1633)	39% (638)	29% (478)	15% (239)	9% (154)	8% (124)
>14 days (n=3434)	14% (464)	23% (790)	23% (802)	17% (584)	23% (794)

*Comment: There has been no change in discharge disability scores over the last 2 years. It is hoped that patients discharged with profound disability within the first week or two are patients with known fixed disability on admission and that patients are not being sent into the community without having had sufficient opportunity in hospital or adequate access to ongoing specialist rehabilitation in the community. The recent Care Quality Commission report 'Supporting life after stroke'<sup>4</sup> revealed a lack of adequate community services in many areas of the country.*

## Section 5 Stroke Unit Care

### NICE Guideline Recommendation

**All people with suspected stroke should be admitted directly to a specialist acute stroke unit following initial assessment either from the community or Accident & Emergency department.**

### 5.1 Admission to a stroke unit and type of stroke unit

88% (9978/11353) of patients were admitted to a stroke unit (all types) and the median (IQR) stroke unit stay was 9 (4 - 23) days. The overall median (IQR) length of stay was 9 (4 - 25) days.

Q1.9 PATIENT TREATED IN A STROKE UNIT (OR UNITS) AT ANY TIME DURING THEIR STAY	National (n=11353)	Your site
Any Stroke Unit*		
• Acute Stroke Unit(s)	47% (5373)	
• Combined Stroke Unit(s)	41% (4646)	
• Rehabilitation Stroke Unit(s)	14% (1608)	

\* more than one type of SU could be ticked

*Comment: In 2008 74% of patients went to a stroke unit at some stage during their hospital admission. This has increased to 88% which is excellent progress.*

<sup>4</sup> Care Quality Commission: *Supporting life after stroke*, 2011. [www.cqc.org.uk/publications.cfm?fde\\_id=17176](http://www.cqc.org.uk/publications.cfm?fde_id=17176)

## 5.2 Length of stay in a stroke unit and survival by type of stroke unit

Stroke unit type(s)	N admitted	% admitted	Died as an inpatient?	Mean length of stay in SU(s), in days	Median (IQR) length of stay in SU(s), in days	Median % of inpatient time spent on SU(s)
Any	9978 / 11353	88%	16%	18.4	9 (4-23)	100%
<b>Your site, any SU</b>				<b>Median:</b>		
Combined stroke unit only	4386	39%	Died	17	10 (4-23)	100%
			Survived	18	9 (4-23)	
Rehab stroke unit only (RSU)	158	1%	Died	21	8 (4-34)	85%
			Survived	22	13 (7-29)	
Acute stroke unit only (ASU)	3808	34%	Died	13	8 (3-16)	100%
			Survived	11	6 (3-12)	
ASU + RSU	1366	12%	Died	31	23 (12-42)	100%
			Survived	38	29 (13-56)	
Other combinations	260	2%	Died	26	17 (12-35)	100%
			Survived	38	27 (12-35)	
None	1375 not admitted	12% not admitted				

*Comment: The median percentage of time spent on a stroke unit is 100% with a mean length of stay of 18.4 days and a median length of stay of 9 days which is 90% of the total length of stay for patients with stroke in hospital.*

## 5.3 Admission to a stroke unit for patients with different lengths of stay

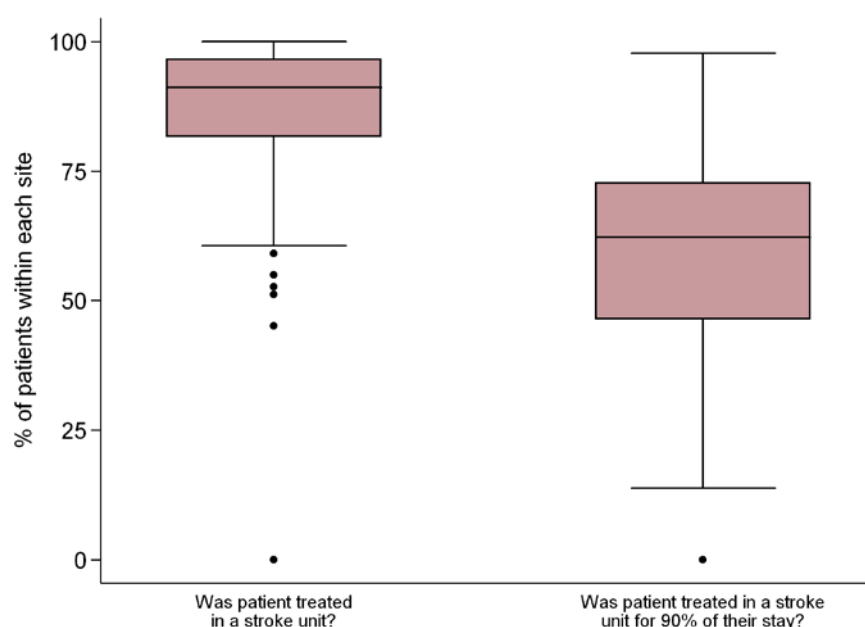
PATIENTS ADMITTED TO A STROKE UNIT	National	Your site
Length of stay in hospital to discharge or death		
0-2 days	65% (1100/1696)	
3-7 days	88% (2782/3172)	
8-28 days	93% (3633/3926)	
>28 days	96% (2417/2511)	
Not known	96% (46/48)	
Type of Stroke Unit admitted to		
	ACUTE SU	REHAB SU
Length of stay in hospital:		COMBINED SU
0-2 days (N=1696)	34% (585)	1% (20)
3-7 days (N=3172)	48% (1527)	5% (146)
8-28 days (N=3926)	49% (1915)	14% (553)
>28 days (N=2511)	52% (1311)	34% (858)
Unknown (N=48)	73% (35)	65% (31)
		25% (12)

*Comment: More than one in three patients with an acute stroke hospital stay of 2 days or fewer do not access stroke unit care. More than one in 10 acute stroke patients who stay in hospital for up to a week still do not get to the stroke unit. Whilst the former is undoubtedly*

*due to lack of effective direct admission policy to acute stroke units, the latter we know from the 2010 Sentinel Organisational Audit is more likely due to poor internal bed management leading to stroke patients lying in generic wards whilst patients with non stroke diagnosis occupy specialist stroke unit beds. Direct admission to a stroke unit for all patients unless they need higher level care (eg ICU) should be provided at all times.*

## 5.4 Ninety per cent of stay in a Stroke Unit

Site variation (n=200):



NINETY PERCENT STAY ON SU	% (N) applicable		% (N) compliance	
	National	<b>Your site</b>	National	<b>Your site</b>
Q1.11 Did the patient spend over 90% of their stay on a stroke unit	77% (8780)		72% (6350)	
Did the patient spend over 90% of their stay on a stroke unit as calculated from dates given	77% (8780)		60% (5260)	

We have selected inpatient stays of 3 to 60 days inclusive for inclusion in this indicator, thus making 77% of the cases (8780/11353) eligible, though not all of these were admitted to a SU. Also, people who were inpatients at the time of the stroke have their length of stay calculated from the stroke date rather than the admission date.

*Comment: Calculation of the statistic for 90% stay on a stroke unit is difficult using the data we have as the denominator is days rather than hours. However both the locally estimated and our calculated data suggest that about two-thirds of patients spend more than 90% of their hospital stay on the stroke unit which is a slight improvement since 2008.*

## 5.5 Markers of Quality of Care for Patients Managed on Stroke Units vs Others

### *Extract from the National Clinical Guidelines for Stroke 2008 Recommendations*

- A** Every patient should have their ability to swallow screened and documented as soon as practical after stroke onset by a person with appropriate training using (if appropriate) a recognised, standard screening assessment (e.g. swallowing 50 mls of water).
- B** Until a safe swallowing method has been established, all patients with identified swallowing difficulties should
- receive hydration (and nutrition after 24 - 48 hours) by alternative means.
  - be given their medication by the most appropriate route and in an appropriate form.
  - have a comprehensive assessment of their swallowing function undertaken by a speech and language therapist or other appropriately trained professional with specialism in dysphagia.
  - be considered for nasogastric tube feeding,
  - be considered for the additional use of a nasal bridle if the nasogastric tube needs frequent replacement
  - have written guidance for all staff / carers to use when feeding or providing liquid.
- C** Patients with difficulties in swallowing should be assessed by a speech and language therapist or other appropriately trained professional with specialism in dysphagia for active management of oral feeding by:
- sensory modification, such as altering taste and temperature of foods or carbonation of fluids
  - texture modification of solids and / or liquids
- D** Every patient who requires food or fluid of a modified consistency should:
- be referred to a dietician or multidisciplinary nutrition team
  - have texture of modified food or liquids described using national agreed descriptors
  - have both fluid balance and nutrition monitored
- E** Patients with difficulties in self-feeding should be assessed and provided with the appropriate equipment to enable them to feed independently and safely.
- F** Gastrostomy feeding should be considered for patients who:
- need but are unable to tolerate nasogastric tube feeding within the first four weeks
  - are unable to swallow adequate amounts of food orally at four weeks
  - are at long term high risk of malnutrition.

### Comparison of compliance with indicators for all sites depending on whether patients were admitted to a stroke unit or not and if so, the kind of stroke unit

% COMPLIANCE WITH EACH INDICATOR FOR APPLICABLE PATIENTS	All types of stroke unit		ASU	RSU	CSU
	Patients admitted to stroke unit (n=9978)	Patients <b>not</b> admitted to a stroke unit (n=1375)	Patients admitted to an <b>Acute stroke unit</b>	Patients admitted to a <b>Rehab stroke unit</b>	Patients admitted to a <b>Combined stroke unit</b>
Screened for swallowing disorders within first 24 hours of admission (Q3.3)	86%	58%	87%	86%	85%
Brain scan within 24 hours of stroke (Q1.13iv)	99%	91%	99%	99%	99%
Commenced aspirin by 48 hours after stroke (Q3.4)	93%	89%	93%	94%	93%
Physiotherapy assessment within first 72 hours of admission (Q3.6)	93%	73%	93%	92%	93%



	All types of stroke unit		ASU	RSU	CSU
% COMPLIANCE WITH EACH INDICATOR FOR APPLICABLE PATIENTS	Patients admitted to stroke unit (n=9978)	Patients <b>not</b> admitted to a stroke unit (n=1375)	Patients admitted to an <b>Acute stroke unit</b>	Patients admitted to a <b>Rehab stroke unit</b>	Patients admitted to a <b>Combined stroke unit</b>
Assessment by an Occupational Therapist within 4 working days of admission (Q4.2)	85%	59%	84%	76%	87%
Weighed at least once during admission (Q5.1)	88%	57%	89%	92%	88%
Mood assessed by discharge (Q5.3)	83%	44%	84%	86%	81%
Rehabilitation goals agreed by the multi-disciplinary team (Q5.5)	80%	40%	81%	74%	81%

*Comment: High quality care is much more likely to be delivered if patients are admitted to a stroke unit. This reinforces the need to make the pathway for all patients to be admitted directly to a stroke unit the top priority for all acute hospitals admitting stroke patients.*

## 5.6 Delay in admission to stroke unit

### NICE Guideline Recommendation

**All people with suspected stroke should be admitted directly to a specialist acute stroke unit following initial assessment either from the community or Accident & Emergency Department.**

TIMINGS	National	
	N	%
Stroke Unit admissions total	9978	88%
• of which were already inpatients*	438	4%
TIME (in days) can be calculated for		
• Stroke to SU admission	9955	100%
• Hospital admission to SU admission	9964	100%

\* The date of stroke is used in place of the date of admission.

### Stroke unit admission in relation to day of stroke

43% (4312) were admitted to a stroke unit on the **same day** as their stroke, whilst 71% (7039) were admitted either on the same day or on the day following their stroke.

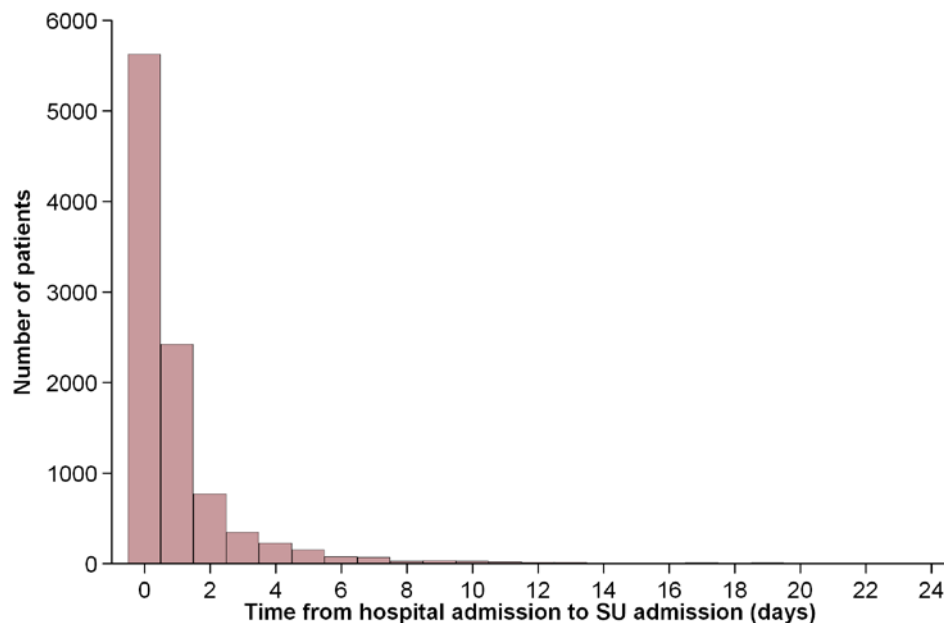
### Stroke unit admission in relation to day of admission

56% of patients (5625) were admitted to a stroke unit on the **same day** as their admission to hospital, and 81% (8050) were admitted the same day or the following day.

DELAY FROM STROKE TO STROKE UNIT ADMISSION	National	Your site
Known	9955	
Median delay	1 day	
IQR	0 to 2 days	

For 4283/9978 patients admitted to a stroke unit within 4 hours of arrival, the proportion of inpatient time spent in a stroke unit was higher than for those taking longer to be admitted to the ASU or CSU: median 100%, IQR 100 to 100% vs. median 91%, IQR 73 to 100%.

For patients admitted to a stroke unit within 4 hours the median (IQR) length of hospital stay (till death or discharge) is 9 (4-24) days compared to 12 (5-31) days for those who were not directly admitted to a stroke unit.



*Comment: Data from the organisational audit suggest that there are probably enough stroke beds across the country for the number of admissions. Too often stroke patients are denied access to the stroke unit because medical patients are occupying some of the beds. The trust management board must make it a priority to organise services so that patients get access to the best quality of care in the same way that acute coronary patients have been managed for many years.*

## 5.7 Therapy provision

### **ICSWP Recommendation and NICE Quality Standard for stroke**

***Patients should undergo as much therapy appropriate to their needs as they are willing and able to tolerate and in the early stages they should receive a minimum of 45 minutes daily of each therapy that is required.***

For the first time in the audit we collected data on the amount of therapy provided by each of the therapy disciplines given to patients in relation to the NICE Quality Standard of 45 minutes of each therapy. The following tables give first preliminary results on the dataset and we plan to give more detailed analysis at a later stage. We analysed the amount of therapy only for patients who had a relevant impairment after stroke (motor deficit, dysphasia and/or dysarthria) as described in section 5.74.

### 5.7.1 Average daily amount of therapy provided

If a patient was deemed appropriate for 45 minutes of therapy on one or more weekdays (Monday-Friday) during the first 28 days, we asked for the average amount of therapy given on these days. The calculated times were divided in four categories as shown in the tables below.

PHYSIOTHERAPY – provided on applicable days	National (% and N)	Your site (% of patients)
45 min and above	32% (2379)	
40-44 min	5% (373)	
20 – 39 min	30% (2179)	
Less than 20 min	33% (2413)	

OCCUPATIONAL THERAPY – provided on applicable days	National (% and N)	Your site (% of patients)
45 min and above	31% (2220)	
40-44 min	4% (266)	
20 – 39 min	23% (1622)	
Less than 20 min	42% (3025)	

SPEECH & LANGUAGE THERAPY – provided on applicable days	National (% and N)	Your site (% of patients)
45 min and above	18% (980)	
40-44 min	2% (120)	
20 – 39 min	16% (898)	
Less than 20 min	64% (3470)	

### 5.7.2 Median number of days appropriate for 45 minutes of therapy

The table below shows the median (IQR) number of days on which the patients were deemed by the clinician to be appropriate for 45 minutes of each therapy. Using physiotherapy as an example for the two tables below, half of all patients (median) with motor deficits were deemed appropriate for 45 minutes on 2 or fewer weekdays.

NUMBER OF WEEKDAYS 45 MIN WAS APPROPRIATE (i.e. patients with impairment and known days)	National Median (IQR) in days	Your site Median in days
Physiotherapy	2 (0-7)	
Occupational Therapy	2 (0-6)	
Speech & Language Therapy	1 (0-3)	

This is only 43% of the weekday-stay or less for half of the patients with motor deficits in the first 28 days of in-hospital stay. At least a quarter of the patients were deemed appropriate for 45 minutes on *not* a single day.

Percentage of inpatient weekdays up to 28 days of stay that therapy was appropriate	National Median (IQR)	Your site
Physiotherapy	43% (0-80)	
Occupational Therapy	33% (0-73)	
Speech & Language Therapy	5% (0-45)	

*Comment: For the first time we have attempted to measure the amount of therapy that patients receive while on the ward. Statement 7 of the NICE Quality Standard states that all patients where they can tolerate it should receive at least 45 minutes of each of the relevant therapies at least five days a week. There are two problems that these data highlight. Firstly patients are deemed capable of tolerating 45 minutes of each therapy per day on only a small proportion of their in-hospital stay, which suggests that our therapists might have expectations of their patients that are too low. The second problem is that even when the patients are deemed suitable they often do not receive this amount – about a third for physiotherapy and occupational therapy and only 18% for speech and language therapy. While the data may not be 100% reliable, as this was the first attempt to collect them and often the data proved difficult to extract, the message is clear. Our patients are not receiving enough face to face therapy. A previous study<sup>5</sup> comparing the amount of therapy received in different European countries showed that despite the UK having high therapy staffing levels, we delivered less direct treatment than our colleagues abroad. Experience from working in the UK shows that the reason for this is not that our therapists are lazy, but that they spend a huge amount of time doing other tasks such as writing lengthy reports and negotiating with community therapists and social services departments; perhaps tasks that could be undertaken by less qualified people just as effectively. A major review of therapy working practices is needed.*

### 5.7.3 Definition of the standard

The NICE Quality Standard states 45 minutes of therapy should be provided if the patient requires that amount and can tolerate it. The definition of appropriateness for 45 minutes of therapy was given in the proforma (appendix 2) and the help booklet. It stated that 45 minutes of therapy was not appropriate if this particular therapy was not indicated for a patient, the patient declined this therapy input, the patient was unable to tolerate this amount of therapy e.g. because the patient had other medical problems (e.g. infections) or the patient was receiving end of life care. The lack of availability of therapy staff was not a justifiable reason for not giving 45 minutes of therapy.

### 5.7.4 Criteria for patient inclusion

We compared the median number of weekdays (Monday – Friday) on which the patient was appropriate for 45 minutes of therapy and the presence of impairment after stroke as answered in Q2.5. As shown in the table below patients with impairment after stroke have a higher level of appropriate days which might be expected.

Comparison of impairments after stroke and appropriate days for 45 minutes of each therapy (median (IQR))	IMPAIRMENT		
	Yes	No	Unknown
Motor deficitis			
• Physiotherapy	2 (0-7) days	1 (0-3) days	0 (0-1) days
• Occupational therapy	2 (0-6) days	1 (0-3) days	0 (0-1) days
Dysphasia			
• Speech & Language therapy	1 (0-4) days	0 (0-1) days	0 (0-0) days
Dysarthia			
• Speech & Language therapy	0 (0-3) days	0 (0-1) days	0 (0-1) days

<sup>5</sup> De Wit L et al. Use of time by stroke patients: A comparison of four European rehabilitation centers. Stroke 2005;36:1977-1983

We also analysed the relation between Barthel score and number of appropriate days. One would expect that patients who are categorised as ‘mild’, ‘moderate’ or ‘severe’ would be more likely to be appropriate for therapy. The table below shows the median (IQR) number of appropriate days for 45 minutes of physiotherapy and occupational therapy in relation to the Barthel score.

Comparison Barthel score and appropriate days for therapy (median (IQR))	Days appropriate for physiotherapy	Days appropriate for occupational therapy
Independent	1 (0-2)	1 (0-3)
Mild	3 (1-7)	3 (1-7)
Moderate	6 (2-13)	5 (2-12)
Severe	6 (2-13)	4 (1-10)
Very severe	5 (1-13)	3 (0-10)

*Comment: It is surprising that the median number of weekdays that a patient with motor problems is considered suitable for at least 45 minutes of therapy is only two rising to six where the deficit is moderate or severe. Even more surprising is the observation that the median number of days that a patient with dysphasia is suitable for 45 minutes of therapy is one. Research is needed to look objectively at the therapy needs of patient and how best to deliver them, so that we can plan more logically the number of therapists required to deliver an adequate level of care.*

### 5.7.5 Data completeness

The table below gives the number of patients with the relevant impairment and the extent to which the number of appropriate days is known - as reported by the auditor. The patients for whom we have days known precisely or by estimate are included in the calculation for median number of appropriate days.

NUMBER OF PATIENTS WITH RELEVANT IMPAIRMENT AND DATA COMPLETENESS FOR APPROPRIATE DAYS	National (% and N of patients with relevant impairment)	Your site (N patients)*
<b>MOTOR DEFICIT</b>		
<b>PHYSIOTHERAPY</b>		
• Days appropriate known – precisely	79% (6751)	
• Days appropriate Known – estimated	11% (975)	
• Days appropriate - unknown	10% (873)	
<b>OCCUPATIONAL THERAPY</b>		
• Days appropriate known – precisely	74% (6401)	
• Days appropriate known – estimated	13% (1137)	
• Days appropriate known - unknown	12% (1061)	
<b>DYSARTHRIA AND/OR DYSPHASIA</b>		
<b>SPEECH &amp; LANGUAGE THERAPY</b>		
• Days appropriate known – precisely	73% (4989)	
• Days appropriate known – estimated	13% (905)	
• Days appropriate known - unknown	14% (950)	

\* Patients for whom the number of appropriate days is unknown are not included in the analysis in 5.7.1 and 5.7.2

## Section 6 Acute care

### **NICE Guideline Recommendation**

***On admission, people with acute stroke should have their swallowing screened by an appropriately trained healthcare professional before being given any oral food, fluid or medication.***

### 6.1 Initial Patient Assessment

#### STANDARDS

(WITHIN 24 HOURS)

	National	Your site	National	Your site
Screen for swallowing disorders (Q3.3)				
• within 4 hours*	84% (9518)		56% (5300)	
• within 24 hours	87% (9896)		83% (8260)	
Visual fields (Q3.1i)	81% (9151)		88% (8020)	
Sensory testing (Q3.1ii)	81% (9154)		91% (8326)	

\* This was measured for the first time as it is now a requirement in the NICE Quality Standard for stroke

The majority of patients are still initially admitted to general assessment units. The care for stroke patients in the early stages after admission is compared between these non-specialised units and stroke units as we would like to see if the quality of care differs in the different settings.

COMPARISON ASSESSMENT UNIT VS STROKE UNIT	% applicable		% compliance	
	AMAU	ACSU	AMAU	ACSU
Screen for swallowing disorders (Q3.3)				
• within 4 hours	84%	87%	46%	72%
• within 24 hours	87%	91%	78%	93%
Visual fields (Q3.1i)	80%	85%	85%	93%
Sensory testing (Q3.1ii)	80%	85%	89%	95%

In the organisational audit 2010 we asked if there are nurses trained in swallow screening available on stroke units and general assessment units. The table below shows the national result and your answers to these questions.

OA: NURSES TRAINED IN SWALLOW SCREENING AS GIVEN IN THE ORGANISATIONAL AUDIT 2010	National	Your site
On the SU at 10am on 7 days a week	90% (178/197)	
On the MAU	49% (84/171)	

*Comment: We are seeing steady improvements in the quality of initial assessment although we should not be satisfied until 100% of appropriate patients are documented as complying with the standards. One way to achieve this would be to directly admit patients to specialist stroke units where standards are universally higher.*

## 6.2 Brain scanning

### **NICE Guideline Recommendations**

**Brain imaging should be performed immediately (ideally the next slot and definitely within 1 hour, whichever is sooner) for people with acute stroke who have any one of the following apply:**

- **indications for thrombolysis or early anticoagulation (see section 8 of guideline)**
- **on anticoagulant treatment**
- **a known bleeding tendency**
- **a depressed level of consciousness (Glasgow Coma Score (GCS) below 13)**
- **unexplained progressive or fluctuating symptoms**
- **papilloedema, neck stiffness or fever**
- **severe headache at onset of stroke symptoms.**

**For all people with acute stroke without indications for immediate brain imaging, scanning should be performed as soon as possible (within a maximum of 24 hours after onset of symptoms).**

BRAIN SCAN AFTER STROKE	National	Your site
Brain scan received	98% (11135/11353)	
If No, reasons		<b>N</b>
• Patient refused / unable to cooperate	11	
• Palliative care	125	
• Not considered clinically indicated	68	
• Unknown	4	

The option 'Scan not routinely available' was not used for any patient.

It was not known if a brain scan had been carried out in 10 patients (0.1%).

SCAN WITHIN 24 HOURS	% compliance with 24 hour standard	
	National	Your site (N)
Brain scan carried out within 24 hours of stroke (as reported by auditor) Q1.14iv	70% (7811)	
If No, reasons		<b>N</b>
• Patient refused / unable to cooperate	2% (64)	
• Palliative care	1% (35)	
• Scan not routinely available	8% (251)	
• Not considered clinically indicated	14% (406)	
• Patient did not arrive in 24 hours	46% (1373)	
• Other	28% (827)	

For 368 /11135 (3%) patients it was unknown if the brain scan had been carried out within 24 hours.

*Comment: Brain imaging is required to make a diagnosis of stroke and is an essential starting point in delivering stroke care. 98% of patients now receive a brain scan which is a dramatic improvement compared to when we first started auditing in 1998. Only 70% of patients however receive this within 24 hours of stroke. When the patients who did not present within 24 hours, those receiving palliative care and those who refused a scan are taken into account the percentage rises to 82%. It is not acceptable that nearly one in five patients do not have a brain scan within 24 hours of stroke without good reason.*

## 6.2i Stroke to brain scan

TIMINGS	National	
	N	%
DATE OF STROKE		
• Known – precise	9157	81%
• Known – estimated	2193	19%
• Unknown	3	0%
TIME OF STROKE		
• Known – precise	4396	39%
• Known – estimated	2472	22%
• Unknown	2289	20%
DATE OF BRAIN SCAN		
• Known	11132	100%
• Unknown	3	0.0%
TIME OF BRAIN SCAN		
• Known	10872	97%
• Unknown	263	3%

The standard within the guidelines is measured from time of stroke to scan. The data are presented both from time of stroke (which may be longer if the patient did not go to hospital immediately) and from admission to scan.

### Stroke to brain scan in days where one or both times are *not* known

STROKE TO SCAN IN DAYS	One or both times not known:		Stroke date estimated:	
	N	%	N	%
Patients known: 4462				
0 day	1118	48	683	32
1 day	676	29	493	23
2 days	225	10	276	13
3 days	139	6	208	10
4-7 days	132	6	291	14
8-14 days	26	1	109	5
>14 days	26	1	60	3

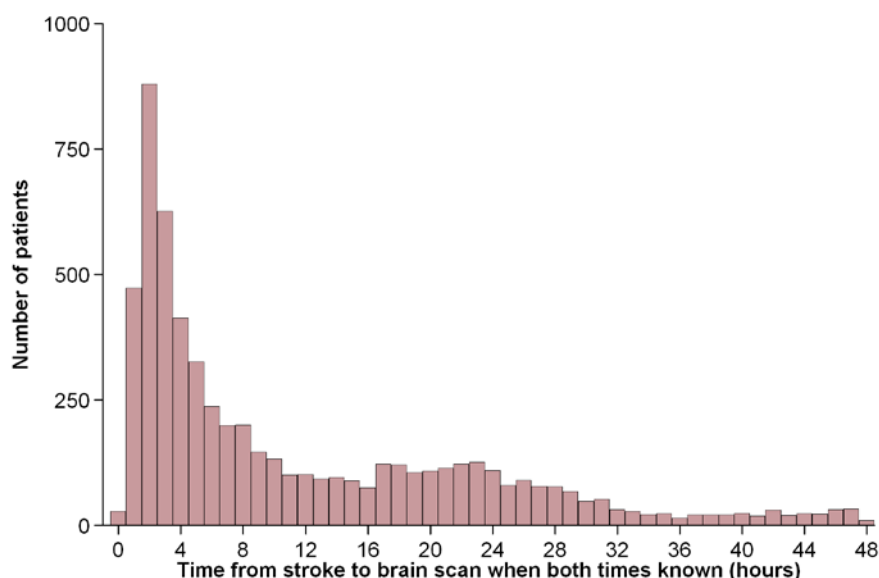
### Stroke to brain scan in hours where time of both is known

STROKE TO SCAN IN HOURS	National		Your site
	N	%	Known for X patients
Patients known: 6531			
Within <b>3 hrs</b>	1735	27%	
Within <b>24 hrs</b>	5114	78%	
1 hour or less	142	2%	
61 minutes to 2 hours	867	13%	
121 minutes to 3 hours	726	11%	
181 minutes to 4 hours	503	8%	
241 minutes to 12 hours	1577	24%	
721 minutes to 24 hours	1299	20%	
1440 minutes to 48 hours	925	14%	
Over 48 hours	492	8%	

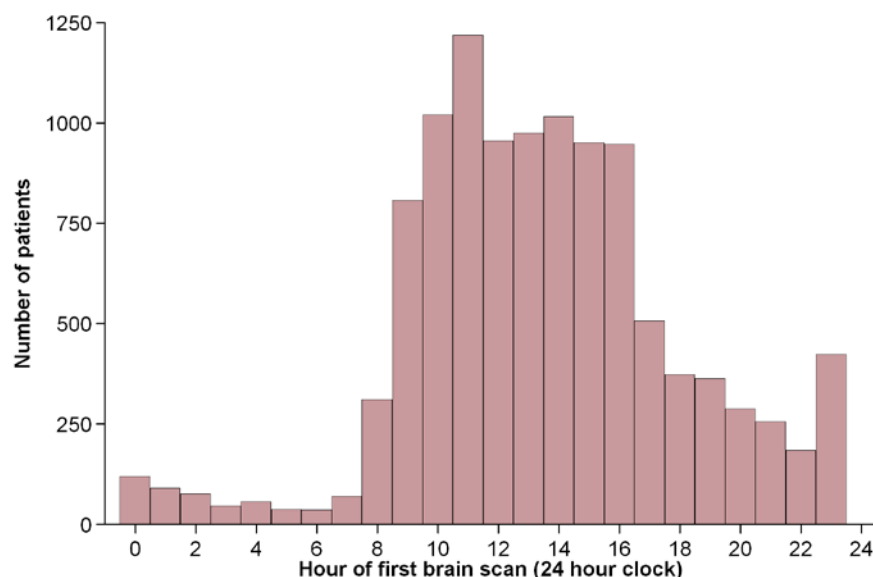


There is slight disagreement between the different ways of estimating the percentage achieving scans within 24 hours, but the most precise figure of 78%, based on exact times of stroke and scan, is similar to the auditor reported answer (70%, which is used in the domain score), and the most optimistic interpretation of the difference in days (67%, 2970/4462).

*Comment: We are improving over time in the speed of access to brain scanning after stroke. However, only a quarter of patients, where times of stroke and scan are known, are scanned within 3 hours of stroke and only 78% within 24 hours of stroke.*



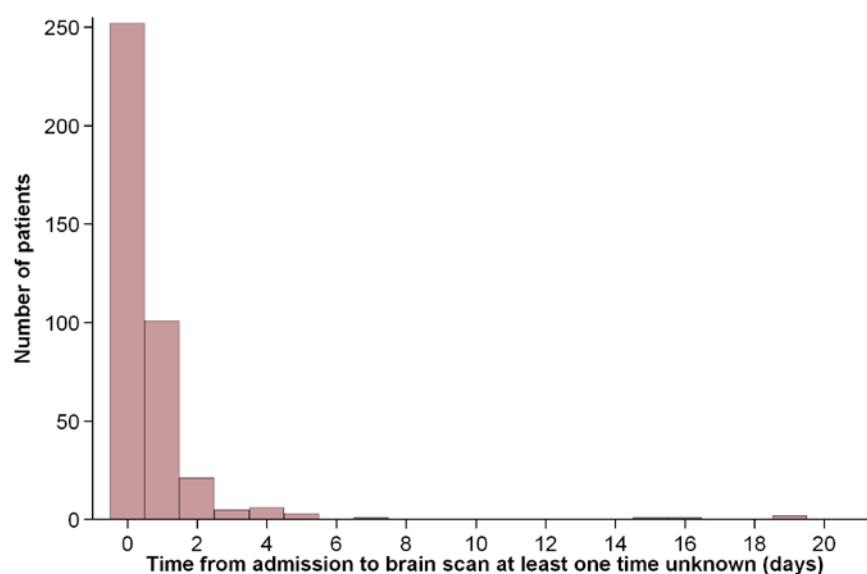
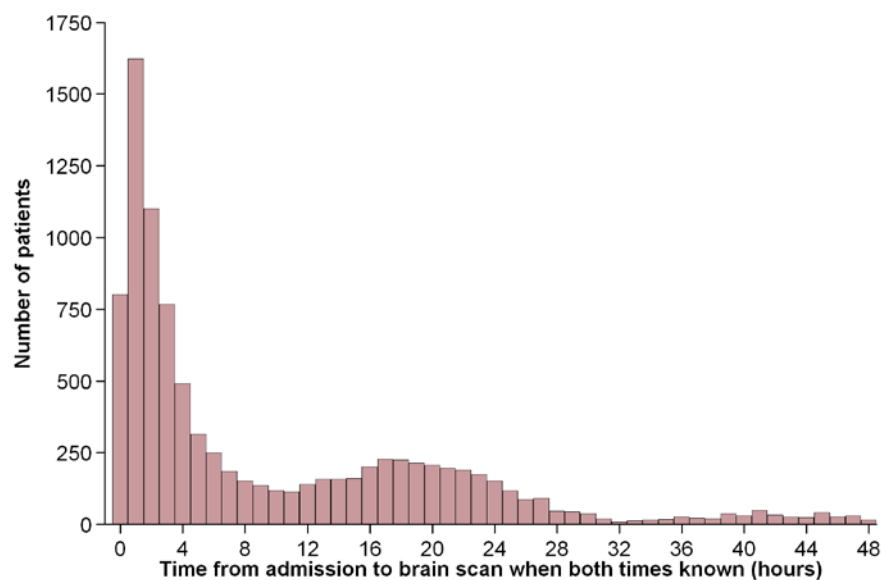
Stroke to scan	National			Your site	
	Known	Median	IQR	Known for	Median
Time from stroke to first scan in days (time not known)	2342	1	(0-1)		
Time from stroke to first scan in days (stroke date estimated)	2120	1	(0-3)		
Time from stroke to first scan in hours	6531	8	(3-22)		



## 6.2ii Admission to brain scan

TIMINGS	National	
	N	%
PATIENTS WITH BRAIN SCAN	11135	
DATE OF ADMISSION		
• Known	11135	100%
• Unknown	0	0.0%
TIME OF ADMISSION		
• Known	10960	98%
• Unknown	175	2%
DATE OF BRAIN SCAN		
• Known	11132	100%
• Unknown	3	0.0%
TIME OF BRAIN SCAN		
• Known	10872	98%
• Unknown	263	2%

Time between admission and first brain scan could be calculated for 10379/11135 (93%) of those who had brain scans. For 9984 of these patients, both times were known and the delay is presented here in hours. For the remaining 395, the delay is given in days. 753 (7%) of the delays were negative and so were omitted from the analysis.



### Admission to brain scan in hours where time of both is known

ADMISSION TO SCAN IN HOURS	National		Your site
Patients known: 9983	N		Known for X patients
Within <b>3 hours</b>	3961	39%	
Within <b>24 hours</b>	8397	84%	
1 hour or less	1757	18%	
61 minutes to 2 hours	1297	13%	
121 minutes to 3 hours	907	9%	
181 minutes to 4 hours	625	6%	
241 minutes to 12 hours	1551	16%	
721 minutes to 24 hours	2260	23%	
1440 minutes to 48 hours	959	10%	
Over 48 hours	628	6%	

ADMISSION TO SCAN	National			Your site
	Known	Median	IQR	Median
Time from admission to first scan in days	395	0	0 – 1	
Time from admission to first scan in hours	9984	5.1	1.6 – 19.3	

*Comment: Only 18% of acute stroke patients are scanned within 1 hour of admission. These are likely to predominantly be those patients being considered for thrombolytic therapy. However, brain imaging is a key investigation in the diagnosis and management of acute stroke and should be considered an urgent investigation for all acute stroke patients – in a similar way to performing an ECG on acute coronary artery syndrome patients.*

### 6.3 Thrombolysis

#### NICE Guideline Recommendations

- 1. Alteplase is recommended for the treatment of acute ischaemic stroke when used by physicians trained and experienced in the management of acute stroke. It should only be administered in centres with facilities that enable it to be used in full accordance with its marketing authorisation. (Alteplase TA122 2007)**
- 2. Alteplase should only be administered within a well organised stroke service with:**
  - **staff trained in delivering thrombolysis and in monitoring for any associated complications**
  - **care up to level 1 and level 2 nursing staff trained in acute stroke and thrombolysis**  
[http://www.datadictionary.nhs.uk/data\\_dictionary](http://www.datadictionary.nhs.uk/data_dictionary)
  - **immediate access to imaging and re-imaging, and staff appropriately trained to interpret the images.**
- 3. Staff in A&E departments, if appropriately trained and supported, can administer thrombolysis in acute stroke provided that patients can be managed within an acute stroke service with stroke service with appropriate neuroradiological and stroke physician support.**
- 4. Protocols should be in place for the delivery and management of thrombolysis, including post-thrombolysis complications.**

#### Patient prescribed Alteplase (tPA) for stroke

Based on the NICE Technology Appraisal patients with the following criteria were considered to be eligible for thrombolysis:

- Onset of symptoms to arrival at hospital less than 3 hours or stroke while being an inpatient
- Aged 80 or under
- Diagnosis after scan is 'infarct'

THROMBOLYSIS	National	
	(n= 11353)	%
ARRIVAL WITHIN 3 HOURS OF STROKE		
• Inpatients at the time of stroke	549	5%
• Time of stroke and admission known	6354	56%
▪ Admitted within 3 hours of stroke	3567	31%
• Eligible patients for time criterion	2977	26%

THROMBOLYSIS	National	
	(n= 11353)	%
AGE 80 OR UNDER		
• Eligible patients for age criterion	6734	59%
DIAGNOSIS INFARCT BY SCAN		
• Eligible patients for diagnosis criterion	9806	86%

14% of all audit patients (1591/11353) satisfied all three of these criteria. 397 of these 1591 patients received thrombolysis. However, sometimes patients were thrombolysed outside the age and/or time criterion. In total, 571 / 11353 (5%) patients in the audit sample received alteplase.

Thus, 14% of all patients could have benefited from thrombolysis, but only 5% received it. We accept that this is a fairly crude calculation. There will be some patients with very mild stroke who should not receive treatment and we cannot identify these from the data. Similarly there are other contraindications to treatment such as recent bleeding or very high blood pressure which again would reduce the potential pool for treatment.

At **your site %** of all patients were eligible and **%** of all patients received thrombolysis.

The audit also asked whether thrombolysis had been given as part of a randomised controlled trial. 33/571 (6%) patients thrombolysed were enrolled in a trial.

*Comment: The thrombolysis rate has increased from 1.8% in 2008 to 5% nationally in 2010, which is a major improvement. This should increase further as more areas of the country start providing 24 hours a day 7 days a week hyperacute stroke services. Our estimate from the 2008 cohort of patients is that using existing license criteria about 15% of unselected stroke admissions would be suitable for treatment with alteplase. If the time limit is increased to 4.5 hours then this would increase to 16% and if the IST3 trial shows that treatment is safe and effective when given to the over 80's then the rate could go as high as 26%. If public awareness campaigns were successful and more people presented earlier than currently then the proportion would rise still further. However treatment should always be given according to the NICE recommendations in centres that are equipped appropriately and staffed with clinicians experienced in its use. Used incorrectly it is a hazardous treatment.*

## 6.4 Acute complications - Infection rates

ACUTE COMPLICATIONS	National		<b>Your site</b>
	N		
Pneumonia developed after admission Q2.7	1458	13%	
Urinary tract infection developed in first 7 days Q2.6	734	6%	

*Comment: Pneumonia as a complication of acute stroke has decreased from 16% in 2008 to 13% in 2010 and urinary tract infection has similarly reduced by 3% from 9% to 6%. This is likely to be as a direct result of better access to and longer stays in specialist stroke units.*

## Section 7 Multidisciplinary Assessment after admission

### **NICE Guideline Recommendations**

***On admission, people with acute stroke should have their swallowing screened by an appropriately trained healthcare professional before being given any oral food, fluid or medication.***

***If the admission screen indicates problems with swallowing, the person should have a specialist assessment of swallowing, preferably within 24 hours of admission and not more than 72 hours afterwards.***

***In people with dysphagia food and fluids should be given in a form that can be swallowed without aspiration following specialist assessment of swallowing***

### **ICSWP Recommendations**

***Every patient who has had a stroke should be assessed formally for their safety and independence in all personal activities of daily living by a therapist or nurse with the results recorded using a standardised assessment tool, preferably the Barthel Activities of Daily Living (ADL) index.***

***Any person who has limitations on any aspect of personal activities, especially but not only if acquired as a result of this stroke, should***

- ***be referred to an occupational therapist with experience in neurological disability and***
- ***be seen for further assessment within four working days of admission, and***
- ***have treatment of identified problems from the occupational therapist who should also guide and involve other members of a specialist multi-disciplinary team.***

STANDARD	% applicable		% compliance	
	National	Your site	National	Your site
<b>7.1</b> Swallowing assessed by Speech and Language Therapist within 72 hours of admission Q3.5	53%		86%	
<b>7.2</b> Patient assessed by Physiotherapist within 72 hours of admission Q3.6	85%		91%	
<b>7.3</b> Initial assessment of communication problems by speech and language therapist within 7 days of admission Q4.1	47%		82%	
<b>7.4</b> Patient assessed by Occupational therapist within 7 days of admission Q4.2i	79%		91%	
<b>7.4i</b> Patient assessed by Occupational therapist within 4 working days of admission Q4.2	77%		83%	
<b>7.5</b> Social work assessment within 7 days of referral Q5.2	34%		67%	

*Comment: We are performing better overall in terms of assessment by the multidisciplinary team, although there are still concerns about the ease of access to social workers and access to occupational therapy is slower for many patients than ideal.*

## Section 8 Screening and Function Assessment after admission

### **NICE Guideline Recommendations**

***People with acute stroke who are unable to take adequate nutrition and fluids orally should***

- ***receive tube feeding with a nasogastric (NG) tube within 24 hours of admission***
- ***be considered for a nasal bridge tube or gastrostomy if they are unable to tolerate an NG tube***
- ***be referred to an appropriately trained healthcare professional for detailed nutritional assessment, individualised advice and monitoring.***

**All hospital inpatients on admission should be screened for malnutrition and the risk of malnutrition. Screening should be repeated weekly for inpatients (wording extracted from the NICE Nutrition Support recommendation)**

**When screening for malnutrition and risk of malnutrition, healthcare professionals should be aware that dysphagia, poor oral health and ability to self feed will affect nutrition in people with stroke.**

**Screening should assess body mass index (BMI) and percentage unintentional weight loss and should also consider the time over which nutrient intake has been unintentionally reduced and/or the likelihood of future impaired nutrient intake. The Malnutrition Universal Screening Tool (MUST), for example, may be used to do this (NICE Nutrition Support recommendation)**

STANDARD	% cases standard applicable		% compliance with standard	
	National	Your site	National	Your site
<b>8.1</b> Patient weighed at least once during admission Q5.1	89%		85%	
<b>8.2</b> Evidence patient's mood has been assessed Q5.3	78%		80%	
<b>8.3</b> Cognitive status assessed Q5.4	84%		85%	
<b>8.4</b> Screened for malnutrition using a standard tool Q3.9	92%		84%	

*Comment: Major improvements have been made over recent years in screening for cognitive, mood and nutritional problems. 85% of patients are now weighed at least once during their admission but it is still difficult to understand why this basic assessment is not done for all stroke patients.*

## Section 9 Care Planning

STANDARD	% applicable		% compliance	
	National	Your site	National	Your site
<b>9.1</b> Written evidence that rehabilitation goals agreed by multidisciplinary team within 5 days of admission Q4.5	68%		78%	
<b>9.2</b> Written evidence that rehabilitation goals agreed by multidisciplinary team by discharge Q4.5i	66%		94%	
<b>9.3</b> Patient was receiving nutrition within 72 hours of admission Q3.8	90%		95%	
<b>9.4</b> Patient was receiving fluids within 24 hours of admission Q3.7	96%		99%	

### Route of Nutrition

Of the 9655 patients receiving nutrition, 87% (8440) received this orally, 13% (1226) nasogastrically or by PEG, and 2% (228) parenterally.

*Comment: As the proportion of patients admitted to a stroke unit increases so multidisciplinary care planning improves. 78% of patients now have evidence of team goals being set within 5 days of admission and 94% have these by discharge. 95% of patients are receiving appropriate nutrition within 24 hours of admission.*

## 9.5 Promotion of Continence

### ICSWP Recommendations

**All wards and stroke units should have established assessment and management protocols for both urinary and faecal incontinence, and for constipation.**

**All patients with loss of control of the bladder at two weeks should:**

- **be reassessed for other causes of incontinence, which should be treated if identified**
- **have an active plan of management documented.**
- **be offered simple treatments such as bladder retraining, pelvic floor exercises and external equipment first.**
- **only be given an indwelling urethral catheter after other methods of management have failed**

CATHETERISATION AND REASONS	National	Your site
Presence of a urinary catheter in the first week Q4.3	20 % (2302/11353)	
Reason not documented	10% (233)	
Reason documented (2069/2302)*:		
• Urinary retention	34% (778)	
• Pre-existing catheter	10% (231)	
• Urinary Incontinence	17% (381)	
• Need for accurate fluid balance monitoring	27% (611)	
• Critical skin care	13% (289)	

\* More than one reason could be selected

*Comment: In one in ten cases of urinary catheterisation in acute stroke patients no clear rationale for the insertion is documented. The use of catheters after stroke has decreased in recent years but remains too high. Catheterisation should only be performed when absolutely necessary and the reason clearly documented in the patients notes.*

### Plan to promote urinary continence

STANDARD	% applicable		% compliance	
	National	Your site	National	Your site
<b>9.5</b> Plan to promote urinary continence Q4.4	28%		63%	

*Comment: Management of urinary continence remains an area where major improvements are needed. This is one of the most common and distressing symptoms caused by stroke and yet less than two thirds of incontinent patients have any plan documented to show how the issue is being managed. This is unacceptable and should be one of the areas that is addressed at a national level through the Stroke Improvement Programme and the stroke networks as well as at local level.*



## Section 10 Communication with Patients and Carers

### ICSWP Recommendations

**Before they leave hospital (or the specialist outpatient clinic if not admitted), every person who has had a stroke or transient ischaemic attack should be asked whether they drive or wish to drive.**

**Every person who has a stroke or transient ischaemic attack and who has a group 1 licence (ie ordinary licence) should be told that they must not drive for a minimum of four weeks, and that a return to driving is dependent on satisfactory recovery.**

**Patients and their carers should have their individual practical and emotional support needs identified:**

- **when they leave hospital**
- **when rehabilitation ends**

**The carer(s) of every patient with a stroke should be involved with the management process from the outset.**

STANDARD	% cases standard applicable		% compliance with standard	
	National	Your site	National	Your site
<b>10.1</b> Discussion with patient about diagnosis Q7.1i	72%		80%	
<b>10.2</b> Discussion with patient about prognosis Q7.1ii	71%		73%	
<b>10.3</b> Advice given on driving Q7.2	36%		65%	
<b>10.4</b> Carer needs for support assessed separately Q7.3	34%		76%	
<b>10.5</b> Skills taught to care for patient at home Q7.4	20%		80%	

*Comment: There have been small improvements in the area of communication with patients but there is still plenty of room to do better. One in five stroke patients are still not having a documented discussion about their diagnosis and in almost one in three cases about the prognosis. Driving advice (a medico-legal requirement) was documented in 65% of appropriate patients in 2010 compared to 51% in 2008. There has been no change in the proportion of carers given help and support and this is an area to focus on in the coming year.*

## Section 11 Planning for Discharge

STANDARD	% applicable		% compliance	
	National	Your site	National	Your site
<b>11.1</b> Follow up appointment with a member of stroke team at approximately 6 weeks post discharge Q7.7	70%		74%	
<b>11.2</b> Discharge organised involving use of an early supported discharge scheme Q7.5	28%		36%	
<b>11.3</b> Rehabilitation planned before discharge Q7.6	40%		83%	

*Comment: A quarter of patients are not given a follow-up appointment within 6 weeks of discharge. This is important as many problems will not become apparent until the patient is back in their own environment and there is nearly always a need for patients and their carers to gain further information and support from specialists after discharge. Only 36% of appropriate patients had access to early supported discharge (ESD) (up from 30% in 2008).*

*This shows that ESD as a service is being implemented very slowly. It is one of the areas being addressed by the Stroke Improvement Programme with their 'Accelerated Stroke Improvement measures' and provision of such a service is recommended in the National Stroke Strategy and National Clinical Guidelines. It is both clinically and cost effective and in times where economies need to be made in the NHS it would seem that this would be an ideal way of reducing costs without compromising on quality.*

## Section 12 Risk Factor Management

### **ICSWP Recommendations**

***Every patient who has had a stroke (including TIA and SAH) and in whom preventative interventions would be appropriate should be investigated for risk factors as soon as possible, certainly within one week of onset. At a minimum this includes checking for:***

- ***raised blood pressure (sustained over 130/90mmHg)***
- ***hyperlipidaemia***
- ***diabetes mellitus***

***For patients who have had an ischaemic stroke or TIA the following risk factors should also be checked for:***

- ***atrial fibrillation and other arrhythmias***
- ***structural cardiac disease***

***All patients who smoke should be advised to stop smoking:***

- ***smoking cessation should be promoted at every opportunity using individualised strategies which may include pharmacological agents and/or psychological support.***

***All patients should be advised to take regular exercise as far as they are able:***

- ***the aim should be to achieve moderate physical activity (sufficient to become slightly breathless) for 20-30 minutes each day.***

This set of standards applies to the 81% (9164) patients who were discharged at the time of data entry.

### 12.1 Risk factors identified

Q2.2 RISK FACTORS IDENTIFIED	% of all patients (n=11353)		% of discharged patients (n=9164 )	
	National	Your site	National	Your site
Are there any of the following risk factors?				
• Current smoker	17% (1877)		1691 (18%)	
• Alcohol excess (>14 units for women and >21 units for men*)	7% (847)		760 (8%)	

\* the number of units have changed compared to 2008 (>21 units for women, >28 units for men)

*Comment: The proportion of patients who are smokers has fallen steadily over recent years.*

## 12.2 Risk factors discussed with the patient

Q6.1 RISK FACTORS DISCUSSED WITH PATIENT AND/OR CARER (for patients discharged alive)	% cases standard applicable		% compliance with standard	
	National	Your site	National	Your site
Smoking cessation	25%		64%	
Alcohol reduction	20%		56%	
Exercise	38%		56%	
Diet	41%		59%	

*Comment: The percentage of patients admitted with stroke who are current smokers has fallen from 19% 2 years ago to 17%. Alcohol excess has changed little rising from 6% to 8%. The evidence from this audit is that there is still more that could be done at a critical time of a patient's life to modify lifestyle stroke risk factors with only just over half of patients having documented evidence of such risk factors being discussed.*

## Section 13 Research

Only 7% of stroke patients (812/11353) were entered into a research trial. **Your site: %**

*Comment: Whilst the total number of patients entered into research trials has increased from 632 to 812, as a proportion of the total audit it remains similar (6% in 2008 compared to 7% in 2010). This is disappointing considering the amount of investment made in the Stroke Research Network.*

## Section 14 Medication and Secondary Prevention

### 14.1 Class of drugs pre-admission

The medication before admission is reported in section 1.6 (casemix).

### 14.2 Antihypertensive Medication

#### **ICSWP Recommendation**

***All patients should have their blood pressure checked, and should be treated in keeping with national guidelines.***

ANTIHYPERTENSIVE MEDICATION	Rates at discharge		Rates at discharge for patients in whom hypertension was a co-morbidity	
	National N	Your site	National N	Your site
Applicable for patients discharged				
Prescribed	6240	68%	4406	84%
Not prescribed	2924	32%	832	16%

*Comment: The rate of prescribing antihypertensives has dropped since 2008 from 71% to 68% of all stroke patients being prescribed blood pressure lowering medication, and 86% to 84% of known hypertensive stroke patients being discharged with antihypertensive medication. It is uncertain why this should be, given lowering blood pressure after stroke is the single most effective and widely applicable intervention to reduce the chance of recurrent stroke.*

### 14.3 Anti-thrombotic treatment

#### **NICE Guideline Recommendation**

**People with disabling ischaemic stroke who are in atrial fibrillation should be treated with aspirin 300 mg for the first 2 weeks before considering anticoagulation treatment.**

#### **ICSWP Recommendations**

**Aspirin and dipyridamole should be the standard secondary prevention treatment following ischaemic stroke:**

- **The daily dose of aspirin should be between 50mg and 300mg aspirin and dipyridamole MR 200mg bd for patients who are unable to tolerate dipyridamole, aspirin alone is appropriate**
- **For patients who are intolerant of aspirin, clopidogrel 75mg once daily is a suitable alternative**

	% (N) applicable		% (N) compliance	
	National	Your site	National	Your site
Aspirin within 48 hours of stroke Q3.4	82% (9295)		93% (8602)	

ANTITHROMBOTIC/ ANTIPLATELET TREATMENT	Rates at discharge		Rates at discharge for patients in whom <b>atrial fibrillation</b> has been identified as a co-morbidity		Rates at discharge for patients in whom MI or angina was a co-morbidity	
	National N	Your site	National N	Your site	National N	Your site
Applicable for patients discharged						
Any antithrombotic / antiplatelet	8144	89%	1598	91%	1479	93%
Aspirin	6616	72%	1029	59%	1148	72%
Clopidogrel	877	10%	128	7%	256	16%
Dipyridamole MR	2952	32%	317	18%	460	29%
Warfarin/other anticoagulant	894	10%	492	28%	174	11%
Warfarin/other anticoagulant <i>planned</i>	331	4%	186	11%	79	5%
Other antiplatelet / antithrombotic	92	1%	19	1%	18	1%
None	1020	11%	151	9%	106	7%
Both Aspirin & Clopidogrel	292	3%	42	2%	100	6%
Both Aspirin & Dipyridamole MR	2895	32%	310	18%	450	28%

Of the 8272 patients who had ischaemic stroke revealed by brain scan and who went on to be discharged, 97% (7997) were prescribed an antiplatelet or antithrombotic by discharge. Corresponding figures for other stroke types were: haemorrhagic stroke 10% (84/816), no scan taken 83% (63/76).

*Comment: Prescribing antiplatelet agents after stroke remains very high. Given the audit has 12% of patients with a primary intracerebral haemorrhage diagnosis, 89% of all patients receiving antiplatelet therapy is reassuring. There has been a small increase in the prescribing of Clopidogrel from 8% in 2008 to 10% in 2010 following the results of the PROFESS trial but this is likely to change in future audits based on the revised NICE recommendations for prescribing antiplatelet treatment published in December 2010.*

*It is disappointing that still so few patients with AF and stroke are prescribed warfarin or have a plan to start warfarin by discharge. This has increased between 2008 and 2010 from 24% to 28% for those on warfarin at discharge and from 9% to 11% for those with a plan to start warfarin at a future point. Given the strength of evidence in favour of warfarin as the secondary prevention treatment of choice for patients in AF after ischaemic stroke there seems to be still an inexplicable reluctance to follow this guidance. The total of 39% of patients in AF on warfarin after stroke in the 2010 audit is some way short of the 60% set by the Department of Health in England as part of the Accelerated Stroke Improvement metrics to be achieved by April 2011.*

#### 14.4 Lipid regulating agents

##### **NICE Guideline Recommendations**

**People with acute stroke who are already receiving statins should continue their statin treatment. People with acute ischaemic stroke and a total cholesterol of 3.5 mmol/litre or greater should be started on statins before discharge from hospital.**

LIPID LOWERING TREATMENT	Rates at discharge		Rates at discharge for patients in whom MI or angina was a co-morbidity	
	National N	<b>Your site</b>	National N	<b>Your site</b>
Applicable for patients discharged				
Any lipid-lowering agent	7410	81%	1387	88
Statin	7346	80%	1368	86%
Other agent	84	1%	27	2%

Of those who had a confirmed infarction, or did not have a brain scan performed, 85% (7078/8348) received lipid-lowering drugs by discharge.

*Comment: Given that statin therapy is unproven in the 12% of primary haemorrhagic strokes included in the audit, 81% of patients being prescribed lipid lowering treatment after stroke is likely to represent the fact that most patients who might benefit from this intervention are being prescribed statins. What is unclear is whether the correct dose of statin and target lipid lowering value is being achieved to optimise this secondary prevention intervention.*

## Section 15 Summary of process of care

### 15.1 Key nine process indicators: site variation

The key nine process indicators were kept the same as in the last two rounds to allow comparisons with these key process figures.

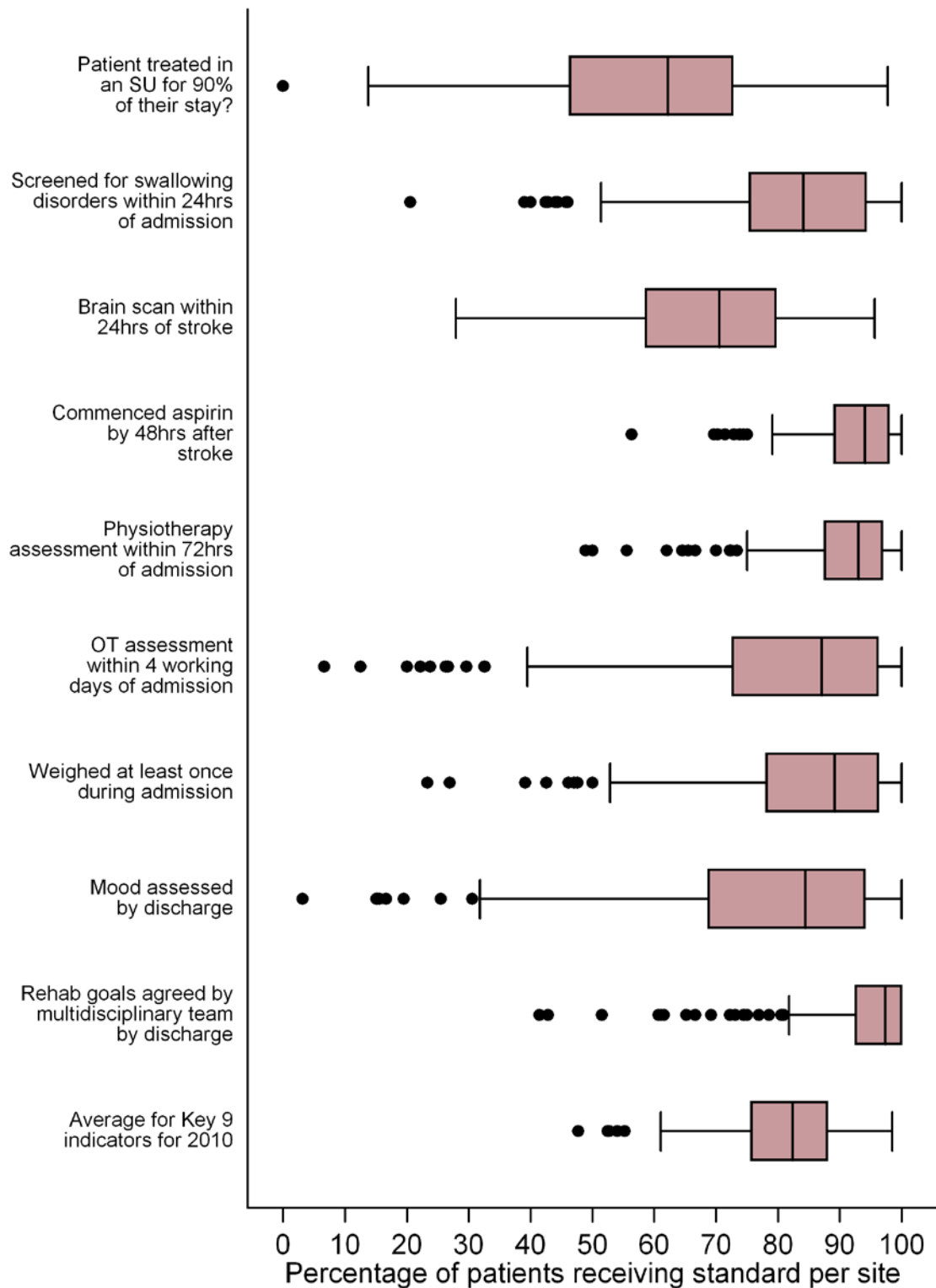
		National			Your site
	Table gives % compliance with each indicator, for applicable patients	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile	% of applicable patients
1	Q1.11 Patients treated for 90% of stay in a Stroke Unit (as calculated)	46.4	62.2	72.7	
2	Q3.3 Screened for swallowing disorders within first 24 hours of admission	75.5	84.1	94.2	
3	Q1.14iv Brain scan within 24 hours of stroke	58.6	70.5	79.7	
4	Q3.4 Commenced aspirin by 48 hours after stroke	89.2	94.1	98.0	
5	Q3.6 Physiotherapy assessment within first 72 hours of admission	87.6	93.0	96.9	
6	Q4.2 Assessment by an Occupational Therapist within 4 working days of admission	72.7	87.1	96.2	
7	Q5.1 Weighed at least once during admission	78.2	89.2	96.3	
8	Q5.3 Mood assessed by discharge	68.8	84.4	94.1	
9	Q4.5i Rehabilitation goals agreed by the multi-disciplinary team by discharge	92.6	97.3	100.0	
KEY 9	Average for 9 indicators for 2010	75.7	82.4	88.0	

## Key 12 indicators: site variation

We have added four additional indicators to the previous nine for this round of the audit and removed one. The reasons for are to reflect standards given in the recent NICE Quality Standard for stroke and to include more aspects of stroke care. There is now a standard for swallowing assessment by a speech and language therapist, a standard for direct admission to a stroke unit, one for discussion with the patient about their diagnosis and rehabilitation goals being set by the team within 5 days of admission. This latter standard replaces the setting of rehabilitation goals by discharge.

			National			Your site
Table gives % compliance with each indicator, for applicable patients			25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile	% of applicable patients
1	Q1.11	Patients treated for 90% of stay in a Stroke Unit (as calculated)	46.4	62.2	72.7	
2	Q3.3	Screened for swallowing disorders within first 24 hours of admission	75.5	84.1	94.2	
3	Q1.14iv	Brain scan within 24 hours of stroke	58.6	70.5	79.7	
4	Q3.4	Commenced aspirin by 48 hours after stroke	89.2	94.1	98.0	
5	Q3.6	Physiotherapy assessment within first 72 hours of admission	87.6	93.0	96.9	
6	Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	72.7	87.1	96.2	
7	Q5.1	Weighed at least once during admission	78.2	89.2	96.3	
8	Q5.3	Mood assessed by discharge	68.8	84.4	94.1	
9	Q3.5	Swallow assessment by SLT within 72 hours	77.6	88.6	95.7	
10	Q1.8	Patient initially admitted to SU	16.1	35.3	57.7	
11	Q4.5	Rehabilitation goals agreed by the multi-disciplinary team within 5 days of admission	64.5	81.6	93.9	
12	Q7.1i	Discussion about diagnosis	66.7	84.8	95.7	
KEY 12			Average of 12 indicators for 2010	70.5	76.6	83.5

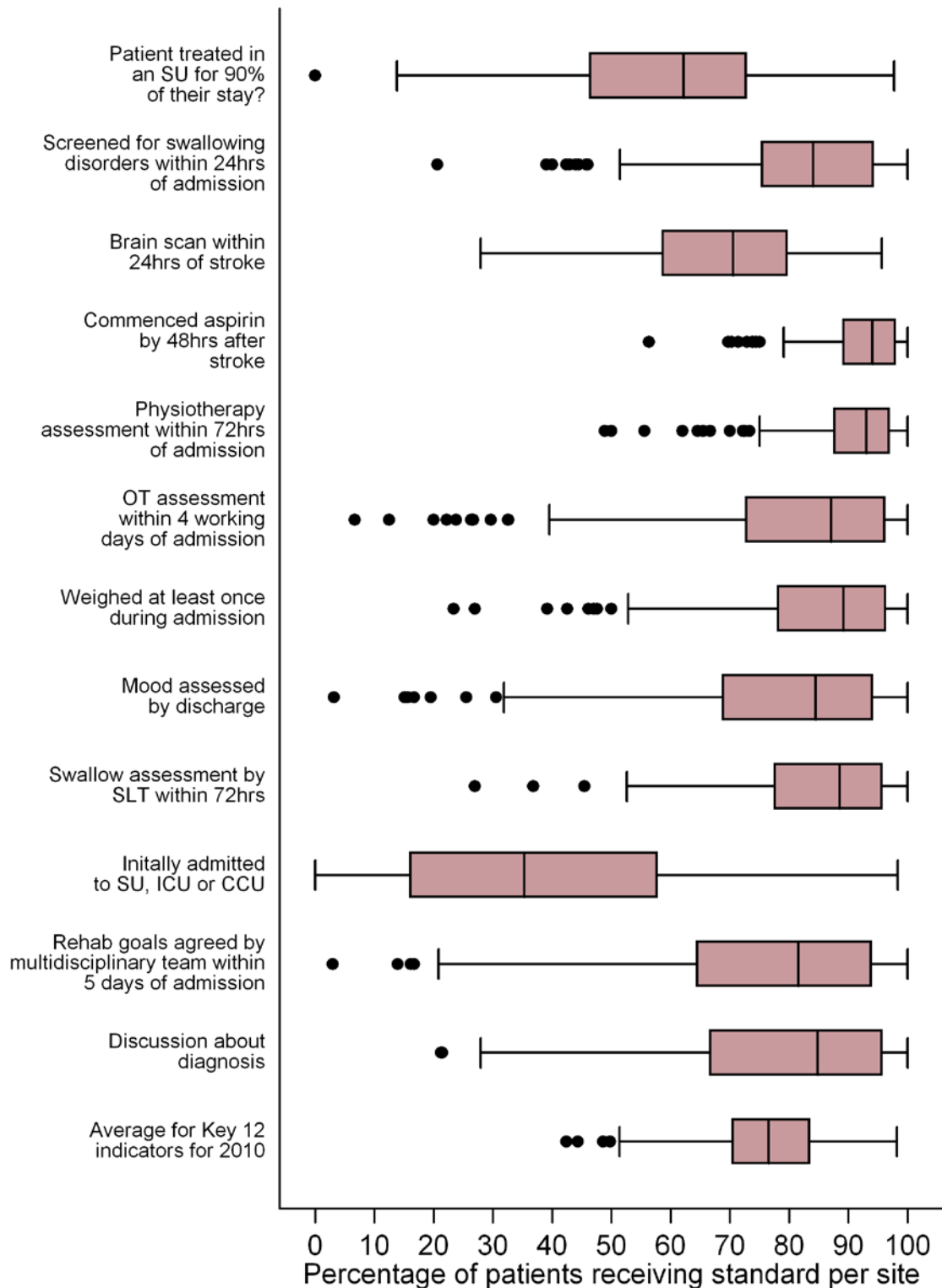
The box plots below show the distribution of scores for each of the nine indicators.



**Your site's** key nine indicator average score was in the **lower quartile/middle half/upper quartile**.



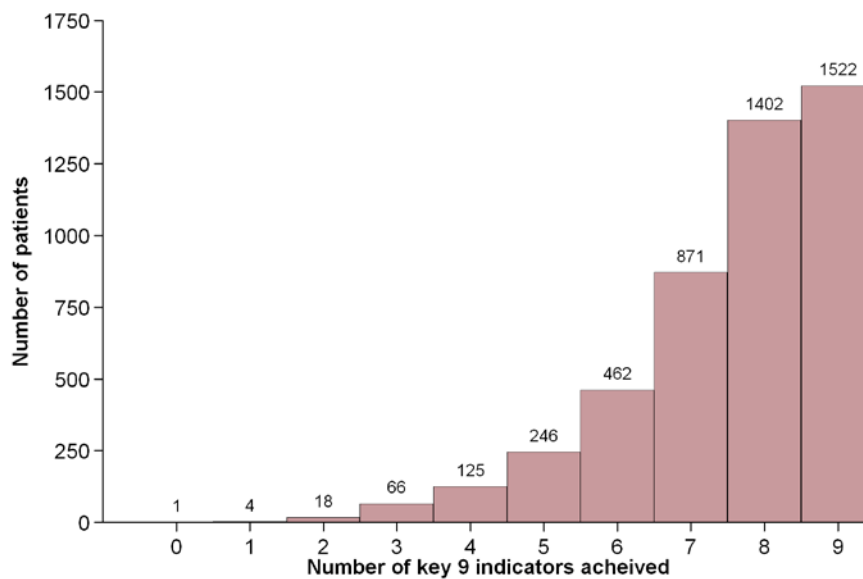
The box plots below show the distribution of scores for each of the 12 indicators.



**Your site's** key 12 indicator average score was in the **lower quartile/middle half/upper quartile**.

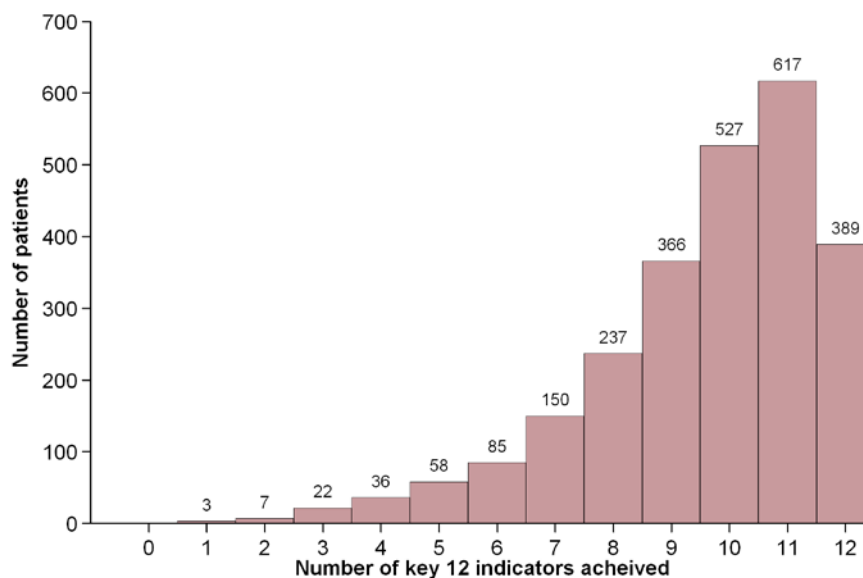
## 15.2 Number of key indicators achieved

The histogram below shows that, out of those patients who are eligible for all *nine indicators*, only 32% (1522/4717) receive all nine.



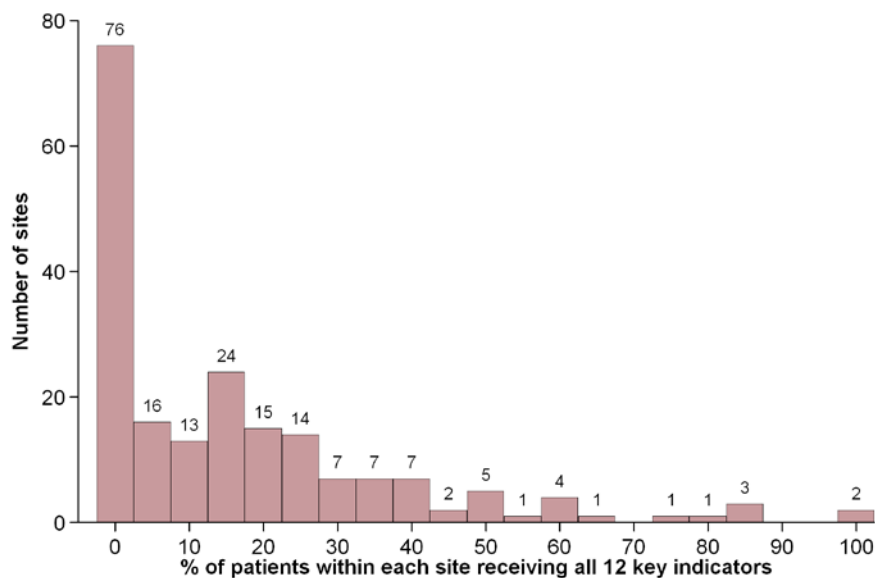
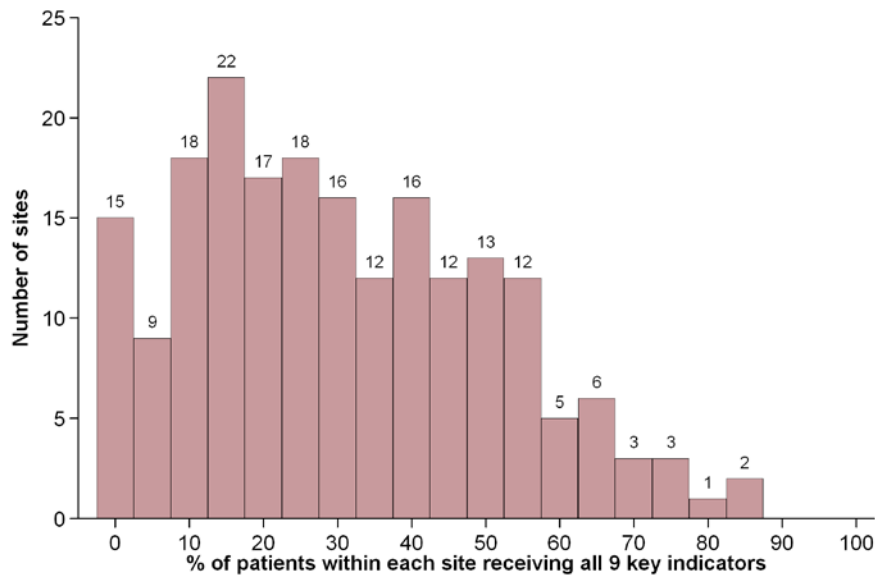
In **your site %** of fully eligible patients received all nine indicators.

The histogram below shows that, out of those patients who are eligible for all *12 indicators*, only 16% (389/2497) receive all 12.



In **your site %** of fully eligible patients received all 12 indicators.

### 15.3 Percentage of appropriate patients receiving all nine indicators



*Comment: Only 32% of patients received all nine of the original key interventions and only 16% received all of the 12 interventions. What these figures show is that although great progress has been made in improving the delivery of individual standards the chances of a patient receiving high quality care across the whole pathway is low. None of these key indicators should be regarded as optional. These data show that we have a lot of work still to do to ensure that care is uniformly good for all patients in all hospitals at all times.*

The percentages in this table show how many patients, of those achieving a given number of the key indicators, are receiving each indicator (e.g. if patients received just one standard, for 75% this was aspirin within 24 hours and for 25% this was weighed by discharge; if patients receiving eight standards only 67% spent 90% on a stroke unit). The shading shows cells with 50% compliance or above.

- Aspirin within 48 hours of stroke and weighed by discharge appear to be the most readily achieved for otherwise relatively underachieving episodes of care.
- In episodes of care where all but one of the indicators are achieved, brain scan within 24 hours of stroke and 90% stay on stroke unit appear to be the indicator holding back patients from receiving all nine.

Number of indicators achieved	% (N) of patients	Proportion who spend 90% of stay in SU	Swallow screen within 24h of admission	Brain scan within 24h of stroke	Aspirin 48h after stroke	Physio within 72h of admission	OT within 4 working days of admission	Weighed by discharge	Mood assessed by discharge	Rehabilitation goals
0	0.0 (1)	0	0	0	0	0	0	0	0	0
1	0.1 (4)	0	0	0	75	0	0	25	0	0
2	0.4 (18)	6	11	0	33	39	11	56	17	28
3	1 (66)	12	27	26	50	38	14	53	30	50
4	3 (125)	13	38	36	62	50	34	66	43	58
5	5 (246)	22	50	33	75	74	54	70	46	78
6	10 (462)	33	65	40	83	82	68	77	61	91
7	18 (871)	46	84	48	92	92	79	87	77	96
8	30 (1402)	67	95	71	98	97	93	94	87	98
9	32 (1522)	100	100	100	100	100	100	100	100	100

### 15.4 Process domain and total scores: site variation

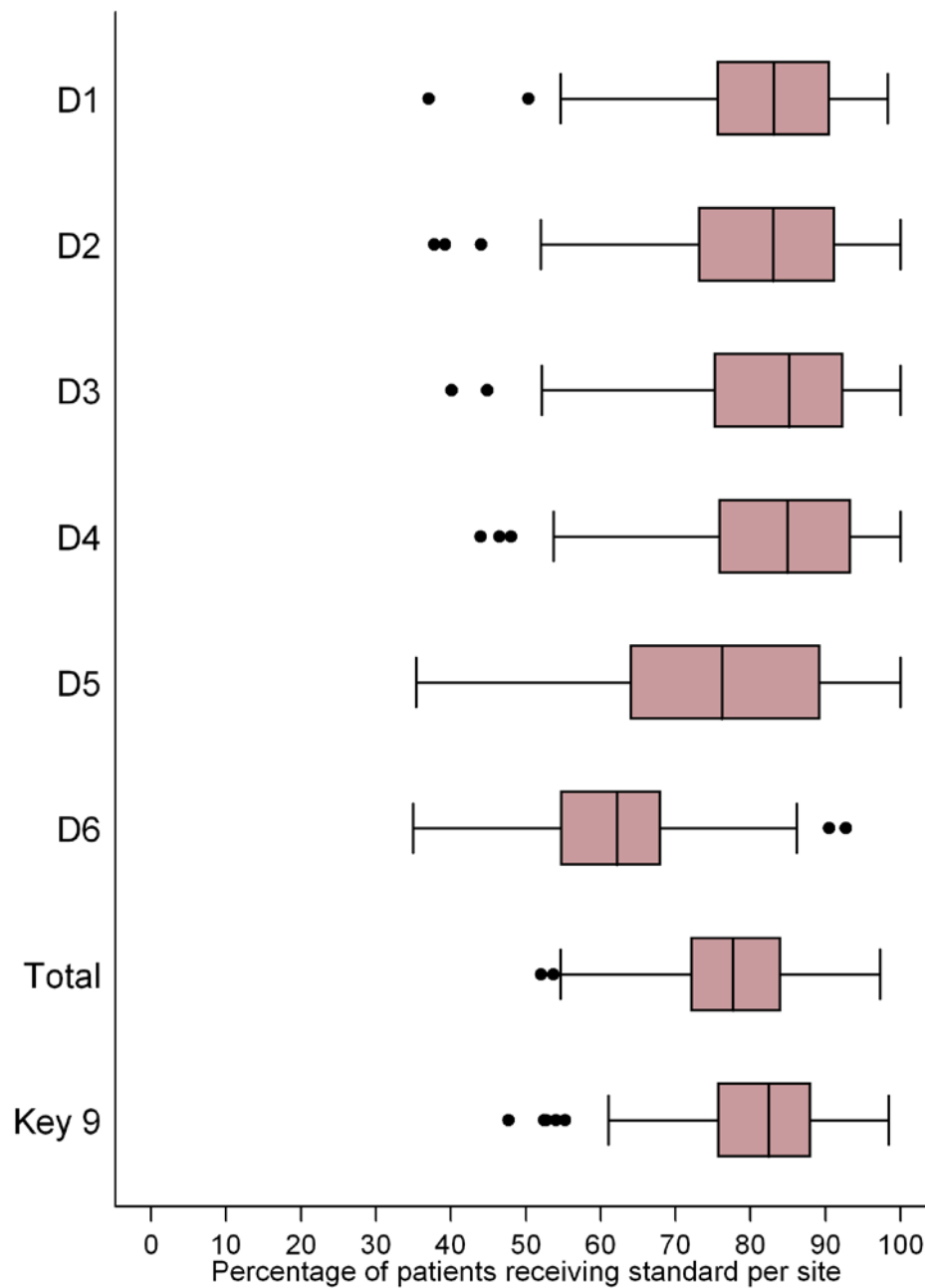
2010 PROCESS OF CARE DOMAIN		25 <sup>th</sup> percentile	National Median	75 <sup>th</sup> percentile	Your site
D1	Initial patient assessment (4 standards)	75.6	83.1	90.5	
D2	Multidisciplinary assessment (5 standards)	73.1	83.0	91.2	
D3	Screening & Functional assessment (4 standards)	75.2	85.1	92.3	
D4	Care planning (3 standards)	75.9	85.0	92.3	
D5	Communication with patients & carers (5 standards)	64.0	76.2	89.2	
D6	Acute care (5 standards)	54.7	62.1	68.0	
Total	(D1+D2+D3+D4+D5+D6)/6	72.1	77.7	84.0	

In **2010** your total process score was in the **lower quartile/middle half/upper quartile**.

In **2008** your total process score was in the **lower quartile/middle half/upper quartile**.

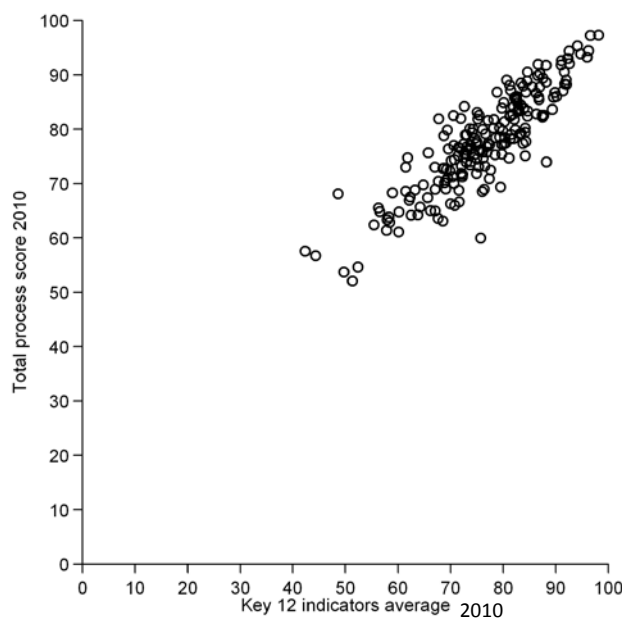
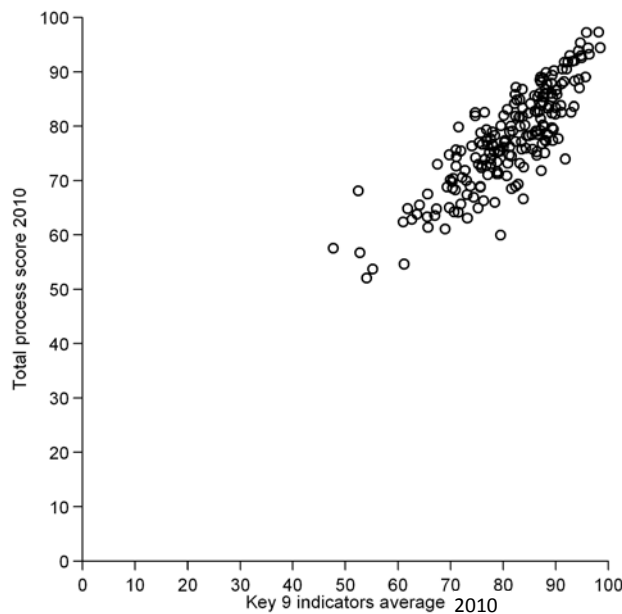
*Comment: Scores for the audit have increased across the board – so that trusts may increase their total process score but not change their quartile position.*

The box plots below show the distribution of scores for each of the six domains.



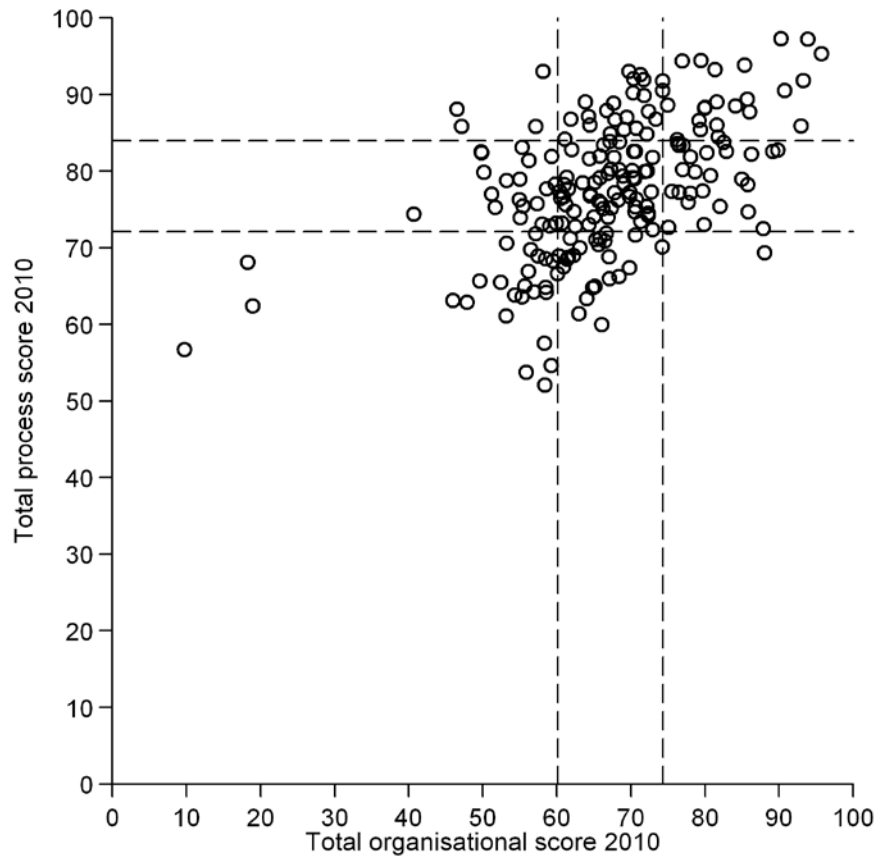
### 15.5 Site variation for process total and key process indicator scores in 2010

There was a strong linear relationship between the total score and both the key nine and key 12 indicator averages. The key nine average captured 71% of the variation in the total score, whilst the key 12 average captured 77%. Comparing the quartiles that sites lie in, when defined by total score and by key nine indicators, 118 sites (59.0%) would be in the same quartile, 40 (20.0%) would be in a higher quartile with the key nine, and 42 (21.0%) would be in a higher quartile with the total process score. For the key 12 indicators, 121 sites (60.5%) would be in the same quartile as for the total process score, 39 (19.5%) would be in a higher quartile with the key 12 and 40 (20.0%) would be a lower quartile for the key 12.



## 15.6 Site variation comparing most recent organisational and clinical results

This scatterplot below shows the relationship between performance in the organisational and clinical audits 2010. The R squared=0.28, so 28% of variability is explained.



In **2010** **your total organisational score** was in the **lower quartile/middle half/upper quartile**.

In **2010** **your total process score** was in the **lower quartile/middle half/upper quartile**.

## 15.7 Performance against the NICE Quality Standard for stroke

Some of the statements in the NICE Quality Standard can only partly be addressed by the Sentinel audit and for others Sentinel measures may be used as a proxy.

Statements	National	Your site
<b>1*</b> <i>People seen by ambulance staff outside hospital, who have sudden onset of neurological symptoms, are screened using a validated tool to diagnose stroke or transient ischaemic attack (TIA). Those people with persisting neurological symptoms who screen positive using a validated tool, in whom hypoglycaemia has been excluded, and who have a possible diagnosis of stroke, are transferred to a specialist acute stroke unit within 1 hour.</i>		
<ul style="list-style-type: none"> <li>Ambulance record available</li> </ul>	64%	
<ul style="list-style-type: none"> <li>Validated tool used in ambulance records</li> </ul>	83%	
<ul style="list-style-type: none"> <li>Admission to stroke unit within 4 hours (% compliance)</li> </ul>	56%	
<b>3</b> <i>Patients with suspected stroke are admitted directly to the specialised acute stroke unit and assessed for thrombolysis, receiving it if clinically indicated.</i>		
<ul style="list-style-type: none"> <li>Proportion receiving thrombolysis (if eligible)</li> </ul>	25%	
<b>4</b> <i>Patients with acute stroke have their swallowing screened by a specially trained healthcare professional within 4 hours of admission to hospital, before being given any oral food, fluid or medication, and they have an ongoing management plan for the provision of adequate nutrition.</i>		
<ul style="list-style-type: none"> <li>Swallow screening within 4 hours (% compliance)</li> </ul>	42%	
<ul style="list-style-type: none"> <li>Patient received nutrition within 72 hours of admission? (% compliance)</li> </ul>	89%	
<b>5*</b> <i>Patients with stroke are assessed and managed by stroke nursing staff and at least one other member of the specialist rehabilitation team within 24 hours of admission to hospital and by all relevant members of the specialist rehabilitation team within 72 hours of admission with documented multidisciplinary goals agreed within 5 days.</i>		
<ul style="list-style-type: none"> <li>Swallow screen within 24 hours</li> </ul>	83%	
<ul style="list-style-type: none"> <li>Physiotherapy assessment within 72 hours</li> </ul>	91%	
<ul style="list-style-type: none"> <li>Swallow assessment by SLT within 72 hours</li> </ul>	86%	
<ul style="list-style-type: none"> <li>OT within 4 days</li> </ul>	91%	
<ul style="list-style-type: none"> <li>Multidisciplinary goals within 5 days</li> </ul>	78%	
<b>6†</b> <i>Patients who need ongoing inpatient rehabilitation after completion of their acute diagnosis and treatment are treated in a specialist stroke rehabilitation unit.</i>		
<ul style="list-style-type: none"> <li>SU at any time</li> </ul>	98%	
<ul style="list-style-type: none"> <li>90% in SU</li> </ul>	60%	
<b>7</b> <i>Patients with stroke are offered a minimum of 45 minutes of each active therapy that is required, for a minimum of 5 days a week, at a level that enables the patient to meet their rehabilitation goals for as long as they are continuing to benefit from it and able to tolerate it.</i>		
<ul style="list-style-type: none"> <li>At least 40 min of each therapy (Physio/OT/SLT)<sup>1</sup></li> </ul>	36%/35%/15%	
<ul style="list-style-type: none"> <li>Median numbers of appropriate days (Physio/OT/SLT)</li> </ul>	2/1/0	
<ul style="list-style-type: none"> <li>Percentage of weekdays within first 28 days of hospital stay therapy was appropriate (Physio/OT/SLT)</li> </ul>	33%/25%/0%	
<b>8*</b> <i>Patients with stroke who have continued loss of bladder control 2 weeks after diagnosis are reassessed to identify the cause of incontinence, and have an ongoing treatment plan involving both patient and carers.</i>		
<ul style="list-style-type: none"> <li>Plan to promote urinary continence</li> </ul>	63%	
<b>11*</b> <i>Carers of patients with stroke are provided with a named point of contact for stroke information, written information about the patient's diagnosis and management plan, and sufficient practical training to enable them to provide care.</i>		
<ul style="list-style-type: none"> <li>Carer needs for support assessed separately</li> </ul>	76%	
<ul style="list-style-type: none"> <li>Skills taught to care for patient at home</li> </ul>	80%	

\* statement only partly addressed

† Sentinel data used as a proxy

<sup>1</sup> This is less stringent as we collected the data for the first time.



## Chapter 2 Changes over time

### 2.1 Summary of applicability of standards in 2010 compared to previous rounds

This table looks at the rate at which sites responded “no but...” to questions indicating that the standard did not apply for valid reasons specified in the proforma. It indicates that, in general, the standards are being considered applicable for the same proportion of patients than previously. For the first time, we have added in individual applicability rates so you can compare your casemix.

Standards	% APPLICABILITY				2010- national	2010-your site
	2004	2006	2008			
Aspirin within 48 hours of stroke	67	73	79		<b>82</b>	
% admitted to a stroke unit during their stay	100	100	99		<b>100</b>	
% admitted to an acute or combined SU within 4 hours	Not asked		99		<b>99</b>	
% spending >90% of stay in a stroke unit	Not asked	Not asked	58		<b>77</b>	
Screen swallowing disorders in the first 4 hours					<b>84</b>	
Screen swallowing disorders within 24 hours	79	79	81		<b>87</b>	
Visual Fields	67	70	73		<b>81</b>	
Sensory testing	68	70	73		<b>81</b>	
Brain scan carried out within 24 hours of stroke	70	99	97		<b>98</b>	
Patient received alteplase if appropriate	Not asked	Not asked	15		<b>14</b>	
Swallowing assessed by Speech and Language Therapist within 72 hours of admission	50	47	50		<b>53</b>	
Patient assessed by Physiotherapist within 72 hours of admission	82	83	82		<b>85</b>	
Initial assessment of communication problems by Speech and Language Therapist within 7 days of admission	47	46	48		<b>47</b>	
Patient assessed by Occupational Therapist within 4 days of admission	Not asked	65	69		<b>77</b>	
Patient assessed by Occupational Therapist within 7 days of admission	65	65	69		<b>79</b>	
Social work assessment within 7 days of referral	47	42	40		<b>34</b>	
Patient weighed at least once during admission	83	84	85		<b>89</b>	
Evidence patient's mood has been assessed	80	81	83		<b>78</b>	
Cognitive status assessed	80	80	82		<b>84</b>	
Screened for malnutrition	Not asked	Not asked	88		<b>92</b>	
Written evidence that rehabilitation goals agreed by multi-disciplinary team within 5 days					<b>68</b>	
Written evidence that rehabilitation goals agreed by multidisciplinary team by discharge	67	68	68		<b>66</b>	
Plan to promote urinary continence?	28	31	30		<b>28</b>	
Patient receiving fluids within 24 hours of admission	Not asked	Not asked	96		<b>96</b>	
Receiving nutrition within 72 hours	Not asked	87	87		<b>90</b>	
Discussion with patient about diagnosis	66	65	66		<b>72</b>	
Discussion with patient about prognosis	66	64	66		<b>71</b>	
Advice given on driving	Not asked	Not asked	34		<b>36</b>	
Carer needs for support assessed separately	59	50	48		<b>34</b>	
Skills taught to care for patient at home	24	23	23		<b>20</b>	
Follow up appointment at 6 weeks post discharge	Not asked	Not asked	68		<b>70</b>	
Discharge organised involving use of early supported discharge team	Not asked	Not asked	29		<b>28</b>	
Rehabilitation planned before discharge	Not asked	Not asked	39		<b>40</b>	

*Comment: Applicability has increased in most areas of acute stroke care between 2006 and 2010. We suspect this is due to the increase in multidisciplinary clinician involvement in returning the audit that was described in section one. Increased applicability gives added robustness to the audits findings.*

*However, there is a word of caution in that applicability has dipped for several standards around post acute stroke care and transfer of stroke care into the community (social work assessment, agreed multidisciplinary rehabilitation goals, ,continence advice, assessment of carer needs for support). Stroke services must be designed to provide joined up and comprehensive services for the population they serve across hospital, the community and home. Integral to this is joint working with social care and local authorities. The recent 2010 Sentinel Organisational Audit report and the 2011 CQC report have both highlighted national variations in services available after discharge from hospital for stroke patients. The concern is that the apparent 'tail off' in applicability in these standards may reflect a reduction in engagement of social services and local authorities with acute stroke units.*

## 2.2 Summary of compliance with standards in 2010 compared to previous rounds

This table looks at the change in proportion of the national sample receiving care in line with published guidelines between rounds of the audit. Compliance rates are out of applicable patients and therefore the rates here should be read in conjunction with the applicability rates.

Standards	% COMPLIANCE				2010- national	2010-your site
	2004	2006	2008			
Aspirin within 48 hours of stroke	68	71	85		<b>93</b>	
% admitted to a stroke unit during their stay	46	62	74		<b>88</b>	
% admitted to an acute or combined SU within 4 hours	Not asked	Not asked	17		<b>38</b>	
% spending 90% of stay in a stroke unit	Not asked	Not asked	58		<b>60</b>	
Screen swallowing disorders in the first 4 hours					<b>56</b>	
Screen swallowing disorders within 24 hours	63	66	72		<b>83</b>	
Visual Fields	65	74	81		<b>88</b>	
Sensory testing	73	81	85		<b>91</b>	
Brain scan carried out within 24 hours of stroke	59	42	59		<b>70</b>	
Patient received alteplase if appropriate	Not asked	Not asked	9		<b>25</b>	
Swallowing assessed by Speech and Language Therapist within 72 hours of admission	65	67	79		<b>86</b>	
Patient assessed by Physiotherapist within 72 hours of admission	63	71	84		<b>91</b>	
Initial assessment of communication problems by Speech and Language Therapist within 7 days of admission	68	69	75		<b>82</b>	
Patient assessed by Occupational Therapist within 4 days of admission	Not asked	50	66		<b>83</b>	
Patient assessed by Occupational Therapist within 7 days of admission	57	68	81		<b>91</b>	
Social work assessment within 7 days of referral	53	56	65		<b>67</b>	
Patient weighed at least once during admission	52	57	72		<b>85</b>	
Evidence patient's mood has been assessed	47	55	65		<b>80</b>	
Cognitive status assessed	65	71	78		<b>85</b>	
Screened for malnutrition	Not asked	Not asked	69		<b>84</b>	
Written evidence that rehabilitation goals agreed by multi-disciplinary team within 5 days					<b>78</b>	
Written evidence that rehabilitation goals agreed by multidisciplinary team by discharge	68	76	86		<b>94</b>	
Plan to promote urinary continence?	58	54	60		<b>63</b>	
Patient receiving fluids within 24 hours of admission	Not asked	Not asked	98		<b>99</b>	
Receiving nutrition within 72 hours	Not asked	93	93		<b>95</b>	
Discussion with patient about diagnosis	70	69	76		<b>80</b>	
Discussion with patient about prognosis	63	59	67		<b>73</b>	
Advice given on driving	Not asked	Not asked	51		<b>65</b>	
Carer needs for support assessed separately	43	68	76		<b>76</b>	
Skills taught to care for patient at home	63	71	79		<b>80</b>	
Follow up appointment at 6 weeks post discharge	Not asked	Not asked	70		<b>74</b>	
Discharge organised involving use of early supported discharge team	Not asked	Not asked	30		<b>36</b>	
Rehabilitation planned before discharge	Not asked	Not asked	81		<b>83</b>	

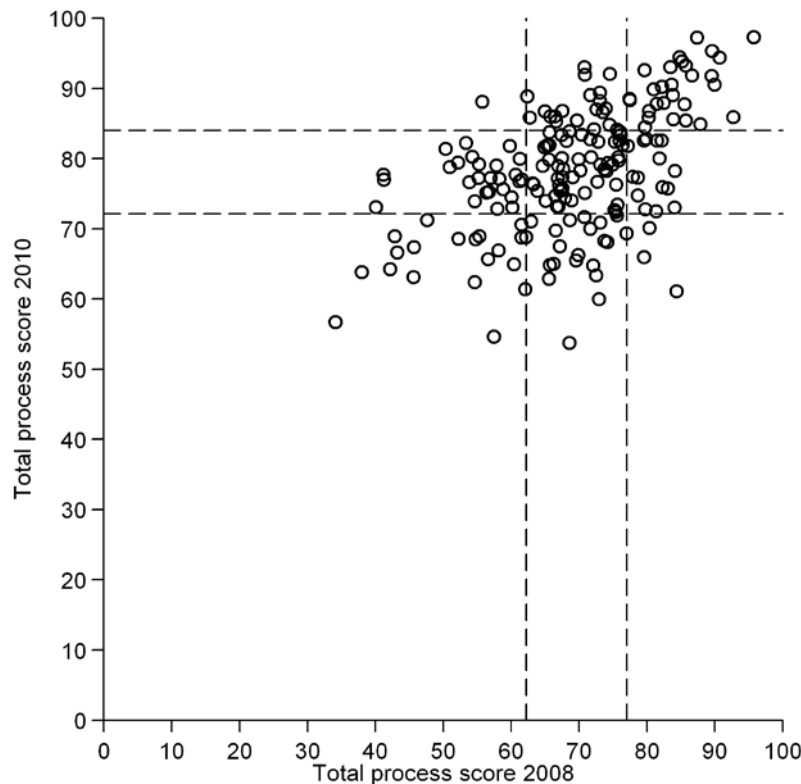
*Comment: Compliance has increased for all standards between 2004 and 2010 indicative of the huge improvements made in stroke care. However note should be taken of the comments made in respect of the compliance with the bundles of key standards described in section 15.3.*

## 2.3 Overall results for key process indicators in from 2006-2010

Table gives % compliance with each indicator for applicable patients		National 2006 Patients 13625	National 2008 11369	National 2010 11353
Q1.11	Patients treated for 90% of stay in a Stroke Unit	51	58	<b>60</b>
Q3.3	Screened for swallowing disorders within first 24 hours of admission	66	72	<b>83</b>
Q1.14iv	Brain scan within 24 hours of stroke	42	59	<b>70</b>
Q3.4	Commenced aspirin by 48 hours after stroke	71	85	<b>93</b>
Q3.6	Physiotherapy assessment within first 72 hours of admission	71	84	<b>91</b>
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	49	66	<b>83</b>
Q5.1	Weighed at least once during admission	57	72	<b>85</b>
Q5.3	Mood assessed by discharge	55	65	<b>80</b>
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	76	86	<b>94</b>
Average for key 9 indicators		60	72	<b>82</b>

## 2.4 Overall results for total process score in 2010 compared to 2008

This scatterplot below shows the relationship between performance in the clinical audits 2008 and 2010. There are 185 sites comparable in 2008 and 2010. The R squared=0.26, so 26% of variability is explained.



		Process score 2010: quartiles			Total
		Lower quartile	Middle half	Upper quartile	
Process score 2008: quartiles	Lower quartile	18	26	1	45
	Middle half	21	52	20	93
	Upper quartile	4	15	28	47
Total		43	93	49	185

In **2010** your total process score was in the **lower quartile/middle half/upper quartile**.

In **2008** your total process score was in the **lower quartile/middle half/upper quartile**.

*Comment: Whilst process scores have increased again between 2008 and 2010, trusts have had to continue to improve in order to maintain their quartile position. The fact that some trusts seem 'stuck' in the lower quartile needs to be seen in the context of the rate of improvement of service within any particular trust.*

## Chapter 3 Regional differences

### 3.1 Clinico-demographic results 2010

COMPARISONS BY COUNTRY	National	England	Wales	N Ireland
Sites (Patients)	200 (11353)	170 (10080)	15 (750)	12 (457)
Gender % male	49	48	52	48
Worst level of consciousness in first week - % Fully conscious	69	69	67	72
Worst level of consciousness in first week - % Unconscious	9	9	9	5
% newly institutionalised on discharge	10	10	10	9
% discharged Barthel score of 20	42	41	44	42
% discharged Barthel scores of <10	22	22	21	18
Mean (SD) Age	75.8 (13.1)	75.8 (13.2)	76.5 (12.3)	74.8 (13.2)
Median (IQR) age	78.3 (68.3-85.5)	78.3 (68.3-85.6)	79.0 (69.4-85.5)	77.9 (66.5-84.3)
Mean (median) LOS to discharge or death	19.5 (9)	19.0 (9)	25.2 (11)	21.3 (10)
Mean (median) LOS to discharge	20.4 (10)	19.8 (10)	26.2 (11)	21.0 (10)
Mean (median) LOS to death	15.9 (8)	15.2 (8)	21.3 (10)	23.5 (13)

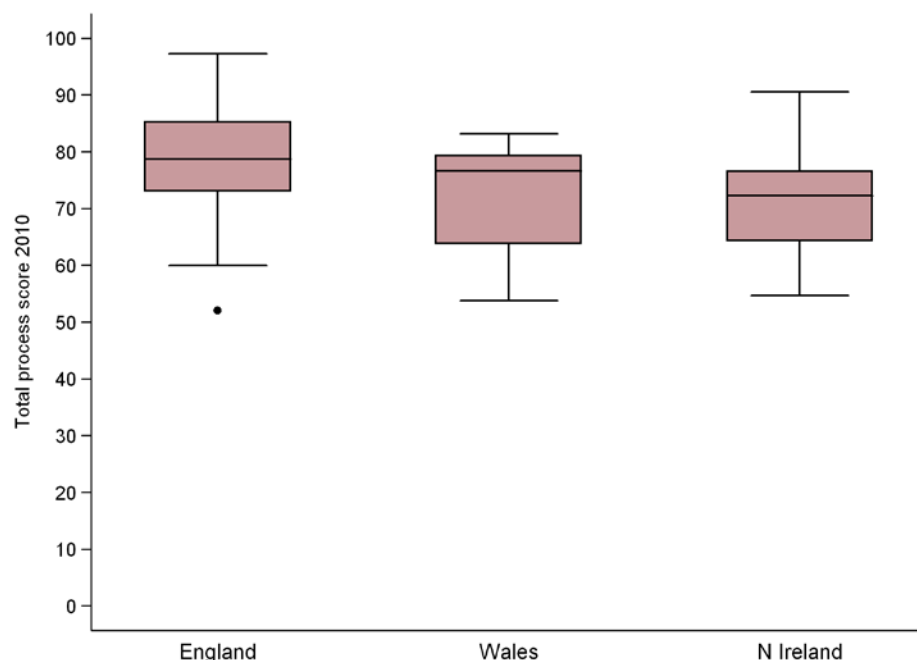
*Comment: The casemix is remarkably similar between the three countries, as is the level of disability at discharge and rate of new institutionalisation on discharge. The length of stay to discharge of death is, however, very different between Wales and England. This is likely to be due to access to specialist stroke unit care variance which was seen in the Sentinel Organisational Audit performed over the same period and previously reported as well as differences in access to community rehabilitation services between England and Wales.*

### 3.2 Overall results for key process indicators in 2010

	Table gives % compliance with each indicator for applicable patients	National	England	Wales	N Ireland
Q1.11	Patients treated for 90% of stay in a Stroke Unit	60	62	37	50
Q3.3	Screened for swallowing disorders within first 24 hours of admission	83	85	76	67
Q1.14iv	Brain scan within 24 hours of stroke	70	71	60	57
Q3.4	Commenced aspirin by 48 hours after stroke	93	93	92	91
Q3.6	Physiotherapy assessment within first 72 hours of admission	91	92	87	87
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	83	85	59	77
Q5.1	Weighed at least once during admission	85	86	81	73
Q5.3	Mood assessed by discharge	80	81	66	70
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	94	95	95	92
	Average for 9 indicators for 2010	82	83	73	74

*Comment: There has been a very significant improvement in stroke care in Wales since 2008. England however achieves the highest scores for all the key process indicators. Access to stroke unit care and occupational therapy are particular challenges in Wales whilst Northern Ireland struggles particularly to deliver brain imaging within 24 hours of stroke.*

### 3.3 Site variation by country for key process indicator score in 2010



### 3.4 Site variation for process domain and total scores in 2008

Domain scores were obtained as the simple average of compliance rates to all standards within each domain. The total process score was a simple average of domain scores.

2010 PROCESS OF CARE [median (IQR)]		National (200 sites)	England (170 sites)	Wales (15 sites)	N Ireland (12 sites)
D1	Initial patient assessment	83	84	75	77
D2	Multidisciplinary assessment	82	82	76	84
D3	Screening & Functional assessment	82	83	73	71
D4	Care planning	84	84	87	83
D5	Communication with patients & carers	75	75	80	70
D6	Acute care	63	64	50	62
Total	(D1+D2+D3+D4+D5+D6)/6	78	79	74	74
KEY 9	Key 9 items as described earlier	82	83	73	77

### 3.5 Comparison of results in England from 2006-2010

Table gives % compliance with each indicator for applicable patients		England 2006	England 2008	England 2010
Patients		12231	10077	10080
Q1.11	Patients treated for 90% of stay in a Stroke Unit	51	59	<b>62</b>
Q3.3	Screened for swallowing disorders within first 24 hours of admission	67	74	<b>85</b>
Q1.14iv	Brain scan within 24 hours of stroke	43	57	<b>71</b>
Q3.4	Commenced aspirin by 48 hours after stroke	71	85	<b>93</b>
Q3.6	Physiotherapy assessment within first 72 hours of admission	72	85	<b>92</b>
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	50	68	<b>85</b>
Q5.1	Weighed at least once during admission	57	73	<b>86</b>
Q5.3	Mood assessed by discharge	54	66	<b>81</b>
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	76	87	<b>95</b>
Average for key 9 indicators		60	73	<b>83</b>

*Comment: Stroke care has continued to improve across England reflecting the success of the National Stroke Strategy.*

### 3.6 Comparison of results in Wales from 2006-2010

Table gives % compliance with each indicator for applicable patients		Wales 2006	Wales 2008	Wales 2010
Patients		925	863	750
Q1.11	Patients treated for 90% of stay in a Stroke Unit	39	41	<b>37</b>
Q3.3	Screened for swallowing disorders within first 24 hours of admission	55	52	<b>76</b>
Q1.14iv	Brain scan within 24 hours of stroke	38	50	<b>60</b>
Q3.4	Commenced aspirin by 48 hours after stroke	76	85	<b>92</b>
Q3.6	Physiotherapy assessment within first 72 hours of admission	54	70	<b>87</b>
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	30	43	<b>59</b>
Q5.1	Weighed at least once during admission	54	59	<b>81</b>
Q5.3	Mood assessed by discharge	53	46	<b>66</b>
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	70	74	<b>95</b>
Average for 9 indicators for 2008		52	58	<b>73</b>

*Comment: Wales has made considerable improvements since 2006 and the net increase in score over time is very similar to England (23 points Wales compared to 24 England) again demonstrating the value of a National Strategy and explicit support from central government for service improvement.*



### 3.7 Comparison of results in Northern Ireland from 2006-2010

Table gives % compliance with each indicator for applicable patients		N Ireland 2006	N Ireland 2008	<b>N Ireland 2010</b>
Patients		402	355	<b>457</b>
Q1.11	Patients treated for 90% of stay in a Stroke Unit	60	59	<b>50</b>
Q3.3	Screened for swallowing disorders within first 24 hours of admission	62	70	<b>67</b>
Q1.14iv	Brain scan within 24 hours of stroke	40	55	<b>57</b>
Q3.4	Commenced aspirin by 48 hours after stroke	68	82	<b>91</b>
Q3.6	Physiotherapy assessment within first 72 hours of admission	74	85	<b>87</b>
Q4.2	Assessment by an Occupational Therapist within 4 working days of admission	61	73	<b>77</b>
Q5.1	Weighed at least once during admission	50	68	<b>73</b>
Q5.3	Mood assessed by discharge	77	80	<b>70</b>
Q4.5i	Rehabilitation goals agreed by the multi-disciplinary team	88	83	<b>92</b>
Average for 9 indicators for 2008		64	73	<b>74</b>

*Comment: Although there has been improvement in the total score, dips in swallow screening and mood assessment from 2008 are difficult to explain. The rate in increase in aggregate score for Northern Ireland is approximately half that of England and Wales (an increase of 12 from 2006 to 2010 compared with 23 Wales and 24 England). Unless this changes it is likely that the gap between England and Northern Ireland will increase and Wales will overtake Northern Ireland in terms of delivering high quality acute stroke care.*

## How domain and total scores are derived

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### 2010 Process of care Domain - Standards used to calculate the domain

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D1	<b>Initial patient assessment (4 standards)</b> <ul style="list-style-type: none"> <li>• Screening for swallowing 24 hours (Q3.3)</li> <li>• Visual fields (Q3.1i)</li> <li>• Sensory testing (Q3.1ii)</li> <li>• Brain scan within 24 hours of stroke (Q1.14iv)</li> </ul>
D2	<b>Multidisciplinary assessment (5)</b> <ul style="list-style-type: none"> <li>• Swallowing assessment SLT within 72 hours (Q3.5)</li> <li>• Physio assessment within 72 hours (Q3.6)</li> <li>• Initial assessment of communication 7 days (Q4.1)</li> <li>• OT assessment within 4 working days (Q4.2)</li> <li>• Social work assessment within 7 days of referral (Q5.2)</li> </ul>
D3	<b>Screening &amp; Functional assessment (4)</b> <ul style="list-style-type: none"> <li>• Patient weighed at least once during admission (Q5.1)</li> <li>• Evidence mood assessed (Q5.3)</li> <li>• Cognitive status assessed (Q5.4)</li> <li>• Screening for malnutrition (Q3.9)</li> </ul>
D4	<b>Care planning (3)</b> <ul style="list-style-type: none"> <li>• Evidence of rehab goals (Q5.5)</li> <li>• Plan to promote urinary continence (Q4.4)</li> <li>• Receiving nutrition within 72 hours (Q3.8)</li> </ul>
D5	<b>Communication with patients &amp; carers (5)</b> <ul style="list-style-type: none"> <li>• Discussion with patient about diagnosis (Q7.1i)</li> <li>• Carer needs for support assessed separately (Q7.3)</li> <li>• Skills taught to care for patient at home (Q7.4)</li> <li>• Follow up appointment at 6 weeks (Q7.7)</li> <li>• Driving Advice (Q7.2)</li> </ul>
D6	<b>Acute care (5)</b> <ul style="list-style-type: none"> <li>• Aspirin within 48 hours of stroke (Q3.4)</li> <li>• 90% of stay in a SU (calculated)</li> <li>• Admitted to an acute or combined SU within 4 hours (Q1.9)</li> <li>• Receiving fluids within 24 hours (Q3.7)</li> <li>• % of applicable patients thrombolysed (calculated from 3.2 and others)</li> </ul>
<b>Total</b>	<b>(D1+D2+D3+D4+D5+D6)/6</b>

## Chapter 4 Named Hospital Results by SHA and Country

The two tables in this chapter give named hospital results in alphabetical order of trust name by geographical location. The location is Strategic Health Authority in England and then Wales, Northern Ireland and the Islands.

The chapter describes the percentage compliance for the key indicators as agreed by the Intercollegiate Stroke Working Party for each of the 200 participating sites. These indicators each represent an important aspect of care and together provide a summary of hospital performance. The national compliance rate for each standard and the percentage of patients for whom the standard applied can be found in Chapter 2. This table will form the basis of the public indicators and the areas to be disclosed in the public report. The actual number of cases analysed per hospital is shown in the first column.

### Interpretation of this section of the report

This section of the report should be read in context as part of a full report on the clinical phase of the seventh round of the National Sentinel Stroke Audit. In particular:

- The background to selection of the indicators appears in Presentation of Results as part of the methods section.
- The methods used to obtain the data (retrospective casenote review) are described within the methods section
- The selection criteria (all patients admitted between 1<sup>st</sup> April 2010 and 30<sup>th</sup> June 2010) are outlined further within the methods section
- The full wording of the questions is in Appendix 2.

**Table 4A** below gives the percentage of applicable patients receiving each of the following standards:

- Screening for swallowing disorders within 24 hours of admission
- Brain scan within 24 hours of stroke
- Physiotherapy assessment within first 72 hours of admission
- Assessment by an Occupational Therapist within 4 working days of admission
- Patient weighed at least once during admission
- Mood assessed by discharge
- Rehabilitation goals agreed by the multi-disciplinary team by discharge
- Rehabilitation goals being set by the team within 5 days of admission
- Commenced aspirin by 48 hours of admission

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
National results	11353	83%	70%	91%	83%	85%	80%	94%	78%	93%
East Midlands										
Chesterfield Royal Hospital NHS Foundation Trust	60	94	92	100	84	98	91	97	94	96
Derby Hospitals NHS Foundation Trust	78	85	78	93	94	100	92	100	96	92
Kettering General Hospital NHS Foundation Trust	60	89	82	92	95	95	82	100	90	96
Northampton General Hospital NHS Trust	60	71	76	85	91	62	48	100	72	93
Nottingham University Hospitals NHS Trust	120	95	77	95	74	94	80	95	75	95
Sherwood Forest Hospitals NHS Foundation Trust	56	78	69	95	71	89	71	89	76	98
United Lincolnshire Hospitals NHS Trust (Pilgrim Hospital)	57	88	79	86	73	91	67	91	72	98
United Lincolnshire Hospitals NHS Trust (Grantham and District Hospital)	20	65	50	82	64	100	100	100	55	81
United Lincolnshire Hospitals NHS Trust (Lincoln County)	61	87	93	94	59	93	88	97	81	98
University Hospitals of Leicester NHS Trust in collaboration with Leicestershire County and Rutland PCT	118	68	70	95	87	83	81	99	82	91
East of England										
Basildon and Thurrock University Hospitals NHS Foundation Trust	60	93	68	81	76	96	91	93	80	96
Bedford Hospital NHS Trust	60	100	53	96	100	93	96	100	100	79
Cambridge University Hospitals NHS Foundation Trust	69	84	81	98	91	92	88	100	100	98
Colchester Hospital University NHS Foundation Trust	60	96	78	84	86	96	98	100	89	98
East & North Hertfordshire NHS Trust	60	71	66	62	33	91	81	52	14	71
Hinchingbrooke Health Care NHS Trust	44	74	63	86	100	77	86	96	88	82
Ipswich Hospital NHS Trust	72	85	28	77	72	54	72	97	53	56
James Paget University Hospitals NHS Foundation Trust	59	80	72	91	95	83	86	89	44	88
Luton and Dunstable Hospital NHS Foundation Trust	60	96	75	95	84	96	63	100	93	86
Mid Essex Hospital Services NHS Trust	60	63	67	89	80	75	60	89	72	85

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Norfolk & Norwich University Hospitals NHS Foundation Trust	79	84	67	96	79	93	85	100	79	93
Peterborough and Stamford Hospitals NHS Foundation Trust	60	54	75	88	96	98	62	94	69	84
Princess Alexandra Hospital NHS Trust	60	100	85	96	92	100	96	100	100	100
Queen Elizabeth Hospital King's Lynn NHS Trust	60	90	54	90	96	76	67	100	88	98
Southend University Hospital NHS Foundation Trust	59	87	78	94	67	94	57	100	96	100
West Hertfordshire Hospitals NHS Trust	59	82	85	96	79	70	72	100	94	96
West Suffolk Hospital NHS Trust	60	83	81	95	96	86	100	100	89	94
<b>London</b>										
Barking Havering and Redbridge University Hospitals NHS Trust	90	96	93	99	99	98	87	100	96	99
Barnet and Chase Farm Hospitals NHS Trust	62	78	74	96	96	95	85	98	79	96
Barts and The London NHS Trust jointly with Tower Hamlets PCT	57	96	86	98	100	83	79	97	81	92
Chelsea and Westminster Hospital NHS Foundation Trust	30	100	87	100	97	100	100	100	88	100
Epsom and St Helier University Hospitals NHS Trust (St Helier Hospital)	54	71	52	90	76	85	89	97	82	98
Epsom and St Helier University Hospitals NHS Trust (Epsom General Hospital)	43	51	76	89	55	90	41	93	41	84
Guy's and St Thomas' Hospital NHS Foundation Trust	60	91	85	100	97	87	53	97	84	96
Hillingdon Hospital NHS Trust	50	93	90	98	100	100	100	100	100	98
Homerton University Hospital NHS Foundation Trust	37	91	81	97	94	100	87	96	21	93
Imperial College Healthcare NHS Trust	61	96	84	96	98	95	98	100	95	98
King's College Hospital NHS Foundation Trust	60	98	95	98	100	97	100	100	100	100
Kingston Hospital NHS Trust	42	63	41	95	95	97	66	100	78	100
Lewisham Healthcare NHS Trust	60	100	93	100	95	100	90	100	100	100
Croydon Health Services NHS Trust	54	98	80	92	90	92	92	93	93	98

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Newham University Hospital NHS Trust	55	92	89	100	92	100	96	100	100	100
North Middlesex University Hospital NHS Trust & Haringey PCT combined	54	90	78	85	70	92	65	93	52	98
North West London Hospitals NHS Trust (Northwick Park Hospital)	60	100	80	96	100	100	100	100	96	100
Royal Free Hampstead NHS Trust	49	100	84	100	100	100	100	100	100	100
South London Healthcare NHS Trust	71	46	60	82	47	70	15	41	30	75
St George's Healthcare NHS Trust	60	93	85	96	96	100	94	100	98	98
University College London Hospitals NHS Foundation Trust	58	100	78	100	100	96	100	100	100	100
West Middlesex University Hospital NHS Trust	51	88	88	96	91	73	80	88	78	96
Whipps Cross University Hospital NHS Trust	41	88	95	97	83	97	82	97	87	97
<b>North East</b>										
City Hospitals Sunderland NHS Foundation Trust	60	55	53	49	33	85	60	98	73	86
County Durham and Darlington NHS Foundation Trust (University Hospital North Durham)	58	73	41	84	89	84	76	89	73	87
County Durham and Darlington NHS Foundation Trust (Darlington Memorial and Bishop Auckland General Hospital)	60	78	63	87	59	83	31	73	43	98
Gateshead Health NHS Foundation Trust	59	83	67	87	62	73	73	89	65	90
Newcastle upon Tyne Hospitals NHS Foundation Trust	69	94	77	88	76	95	92	97	88	91
North Tees and Hartlepool NHS Foundation Trust (University Hospital of Hartlepool)	37	73	62	97	97	91	88	93	47	100
North Tees and Hartlepool NHS Foundation Trust (University Hospital of North Tees)	60	100	78	96	98	91	98	100	100	100
Northumbria Healthcare NHS Foundation Trust (Hexham Hospital)	41	85	63	91	77	88	75	81	77	97
Northumbria Healthcare NHS Foundation Trust (North Tyneside General Hospital)	59	96	83	100	98	98	100	94	71	100

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Northumbria Healthcare NHS Foundation Trust (Wansbeck General Hospital)	55	82	65	96	85	87	80	88	73	96
South Tees Hospitals NHS Foundation Trust (The James Cook University Hospital) in collaboration with Middlesbrough PCT and Redcar and Cleveland PCT	60	93	78	93	100	100	94	100	96	100
South Tees Hospitals NHS Foundation Trust (Friarage Hospital) in collaboration with Rutson Rehabilitation Unit (North Yorkshire & York Primary Care Trust)	24	100	52	95	89	95	100	100	100	100
South Tyneside NHS Foundation Trust	56	83	78	90	82	100	89	100	89	93
<b>North West</b>										
Aintree University Hospitals NHS Foundation Trust	60	98	73	98	89	89	97	100	95	98
Blackpool, Fylde & Wyre Hospitals NHS Foundation Trust	47	77	57	88	62	89	78	86	72	92
Central Manchester and Manchester Children's University Hospital NHS Trust	49	78	65	98	100	98	93	97	88	98
Countess of Chester Hospital NHS Foundation Trust	60	80	81	94	95	96	98	94	74	92
East Cheshire NHS Trust	60	93	78	92	95	100	87	97	37	90
East Lancashire Hospitals NHS Trust	65	82	74	88	90	76	54	94	58	74
Lancashire Teaching Hospitals NHS Foundation Trust (Chorley and South Ribble District General Hospital)	48	84	56	89	89	100	100	100	82	88
Lancashire Teaching Hospitals NHS Foundation Trust (Royal Preston Hospital)	58	84	83	93	96	96	98	100	94	98
Mid Cheshire Hospitals NHS Foundation Trust	60	94	90	100	96	100	92	96	90	96
Warrington and Halton Hospitals NHS Foundation Trust	60	83	78	96	96	94	98	100	93	100
North Cumbria University Hospitals NHS Trust (Cumberland Infirmary)	60	85	71	87	94	93	90	100	93	92
North Cumbria University Hospitals NHS Trust (West Cumberland Hospital)	58	71	54	90	64	55	73	86	39	90
Pennine Acute Hospitals NHS Trust (North Manchester General Hospital)	62	100	66	97	89	98	98	95	78	98
Pennine Acute Hospitals NHS Trust (Royal Oldham Hospital)	61	98	76	96	98	100	87	93	87	96



Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Pennine Acute Hospitals NHS Trust (Fairfield General Hospital and Rochdale Infirmary)	58	95	88	100	100	98	100	100	82	96
Royal Bolton Hospital NHS Foundation Trust	57	89	82	96	96	86	94	93	91	93
Royal Liverpool & Broadgreen University Hospitals NHS Trust	63	97	54	98	98	100	100	100	100	100
Salford Royal NHS Foundation Trust	60	100	88	100	100	100	100	100	98	100
Southport and Ormskirk Hospital NHS Trust	60	82	59	98	100	87	100	100	100	87
St Helens & Knowsley Hospitals NHS Trust	59	100	76	81	83	75	85	98	85	86
Stockport NHS Foundation Trust	60	93	80	91	94	91	85	100	100	98
Tameside Hospital NHS Foundation Trust in collaboration with NHS Tameside and Glossop	60	84	77	91	96	96	98	93	33	85
Trafford Healthcare NHS Trust	41	75	68	89	92	82	81	100	55	94
University Hospital of South Manchester NHS Foundation Trust	60	83	71	78	87	91	96	95	88	86
University Hospitals of Morecambe Bay NHS Foundation Trust (Furness General Hospital)	55	94	63	98	95	90	76	100	94	95
University Hospitals of Morecambe Bay NHS Foundation Trust (Royal Lancaster Infirmary & Westmorland General Hospital)	58	87	67	80	73	53	81	74	57	88
Wirral University Teaching Hospital NHS Foundation Trust	68	94	66	95	100	95	100	100	100	89
Wrightington, Wigan and Leigh NHS Foundation Trust	60	80	78	93	69	79	55	89	63	96
<b>South Central</b>										
Basingstoke and North Hampshire NHS Foundation Trust	52	53	38	96	74	75	62	90	50	80
Buckinghamshire Healthcare NHS Trust	60	75	45	88	76	78	71	95	68	88
Heatherwood and Wexham Park Hospitals NHS Foundation Trust	60	80	79	79	87	89	20	81	50	100
Isle of Wight NHS Primary Care Trust	43	100	86	97	13	100	69	90	36	100



Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Milton Keynes Hospital NHS Foundation Trust	40	100	64	94	75	85	97	100	97	100
Oxford Radcliffe Hospitals NHS Trust (Horton General Hospital)	26	65	69	77	73	79	55	90	48	100
Oxford Radcliffe Hospitals NHS Trust (John Radcliffe Hospital)	60	91	73	94	94	100	92	100	92	92
Portsmouth Hospitals NHS Trust jointly with Hampshire and Portsmouth City PCTs	88	81	65	90	83	96	69	98	86	93
Royal Berkshire NHS Foundation Trust	60	94	75	96	96	100	73	100	100	98
Southampton University Hospitals NHS Trust in collaboration with Hampshire PCT & Southampton City PCT	72	81	72	90	79	67	84	61	38	85
Winchester and Eastleigh Healthcare NHS Trust	60	98	70	94	88	98	91	100	90	98
<b>South East Coast</b>										
Ashford and St Peter's Hospitals NHS Trust	70	99	97	100	100	96	63	100	99	95
Brighton & Sussex University Hospitals NHS Trust (Royal Sussex County Hospital Brighton)	60	98	78	100	96	98	79	100	92	100
Brighton & Sussex University Hospitals NHS Trust (Princess Royal Hospital Haywards Heath)	41	80	88	97	75	88	39	96	85	91
Dartford & Gravesham NHS Trust	54	72	78	94	73	80	70	93	44	89
East Kent University Hospitals NHS Foundation Trust (William Harvey Hospital)	61	87	77	94	98	89	93	100	88	95
East Kent University Hospitals NHS Foundation Trust (Kent & Canterbury Hospital)	60	95	90	100	98	98	92	98	95	96
East Kent University Hospitals NHS Foundation Trust (Queen Elizabeth The Queen Mother Hospital)	44	94	82	97	96	91	82	95	89	97
East Sussex Hospitals NHS Trust (Eastbourne District General Hospital)	53	39	54	81	90	95	88	96	41	70
East Sussex Hospitals NHS Trust (Conquest Hospital)	60	46	45	83	52	94	77	86	42	74
Frimley Park Hospital NHS Foundation Trust	56	84	89	96	86	94	87	94	92	95




Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Maidstone and Tunbridge Wells NHS Trust (Kent & Sussex Hospital)	57	94	89	91	96	94	84	98	91	100
Maidstone and Tunbridge Wells NHS Trust (Maidstone Hospital)	56	77	84	83	89	88	75	100	93	85
Medway Maritime Hospital, Medway PCT and Swale PCT	61	77	72	94	64	83	96	100	93	88
Royal Surrey County Hospital NHS Foundation Trust	60	94	87	100	81	83	87	100	98	100
Surrey & Sussex Healthcare NHS Trust	59	92	93	98	100	91	88	89	78	89
Western Sussex Hospitals NHS Trust (St Richard's Hospital)	60	94	82	95	98	90	95	100	89	94
Western Sussex Hospitals NHS Trust (Worthing & Southlands Hospitals)	60	92	58	94	57	98	88	100	71	96
<b>South West</b>										
Dorset County Hospital NHS Foundation Trust	60	79	63	80	74	90	37	82	57	95
Gloucestershire Hospitals NHS Foundation Trust (Gloucestershire Royal Hospital)	60	98	58	89	76	60	95	97	41	100
Gloucestershire Hospitals NHS Foundation Trust (Cheltenham General Hospital)	60	96	47	96	98	71	100	97	28	100
Great Western Hospitals NHS Foundation Trust (in collaboration with Swindon PCT)	60	94	76	98	87	98	96	100	95	98
North Bristol NHS Trust	59	78	78	88	90	46	85	97	73	94
Northern Devon Healthcare NHS Trust	60	98	60	100	100	98	98	100	100	100
Plymouth Hospitals NHS Trust in collaboration with Plymouth PCT	63	98	95	98	78	23	69	100	98	91
Poole Hospital NHS Foundation Trust	61	89	47	89	79	70	83	98	17	81
Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	60	61	63	85	70	82	81	94	50	83
Royal Cornwall Hospitals NHS Trust	64	83	67	81	63	72	85	95	83	91
Royal Devon and Exeter NHS Foundation Trust in collaboration with Devon Primary Care Trust	60	91	68	98	98	90	100	98	83	92
Royal United Hospital Bath NHS Trust in collaboration with Bath & North East	60	85	72	92	78	90	93	100	91	98

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Somerset PCT and Wiltshire PCT										
Salisbury NHS Foundation Trust	60	96	69	95	81	64	100	100	79	96
South Devon Healthcare NHS Foundation Trust combined with Devon PCT	65	85	75	98	98	83	84	100	100	96
Taunton and Somerset NHS Foundation Trust	60	80	77	100	100	96	89	100	95	94
University Hospitals Bristol NHS Foundation Trust	62	83	77	79	80	86	74	98	78	92
Weston Area Health NHS Trust	57	83	73	87	71	91	71	90	73	95
Yeovil District Hospital NHS Foundation Trust	61	82	57	93	100	91	75	83	52	98
<b>West Midlands</b>										
Burton Hospitals NHS Foundation Trust	60	59	56	88	90	88	67	88	73	90
Dudley Group of Hospitals NHS Foundation Trust	60	83	63	100	98	92	47	100	100	98
George Eliot Hospital NHS Trust	55	90	51	88	83	100	91	100	100	74
Heart of England NHS Foundation Trust (Good Hope Hospital)	34	71	56	66	27	50	55	100	79	93
Heart of England NHS Foundation Trust (Birmingham Heartlands and Solihull Hospitals)	79	97	65	94	82	55	60	100	98	92
Hereford Hospitals NHS Trust	60	82	53	96	87	93	93	95	89	88
University Hospital of North Staffordshire NHS Trust combined with North Staffordshire Combined Healthcare NHS Trust	88	78	82	93	94	75	67	96	83	99
Royal Wolverhampton Hospitals NHS Trust jointly with Wolverhampton Health Care NHS Trust	70	89	60	97	98	88	87	98	95	95
Sandwell and West Birmingham Hospitals NHS Trust (Sandwell District Hospital)	60	90	80	100	98	80	86	100	100	96
Sandwell and West Birmingham Hospitals NHS Trust (City Hospital)	60	98	71	94	92	85	71	95	70	87
Shrewsbury & Telford Hospital NHS Trust	76	89	59	96	93	83	81	85	80	84

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
South Warwickshire NHS Foundation Trust	40	85	50	89	79	86	16	100	93	94
University Hospitals Birmingham NHS Foundation Trust in collaboration with South Birmingham Primary Care Trust	60	86	69	100	98	68	90	100	89	100
University Hospitals Coventry and Warwickshire NHS Trust	69	53	75	77	54	66	75	77	48	89
Walsall Hospitals NHS Trust	65	96	72	91	95	27	100	98	77	91
Worcestershire Acute Hospitals NHS Trust (Alexandra Hospital Redditch)	56	82	49	98	100	75	47	100	95	73
Worcestershire Acute Hospitals NHS Trust (Worcester Royal Hospital)	60	56	55	92	72	71	85	93	50	79
<b>Yorkshire and the Humber</b>										
Airedale NHS Trust	60	95	59	89	95	89	95	100	98	80
Barnsley Hospital NHS Foundation Trust	66	88	54	82	87	79	84	100	88	93
Bradford Teaching Hospitals NHS Foundation Trust	60	63	72	98	30	98	98	96	81	94
Calderdale and Huddersfield NHS Foundation Trust	60	94	55	98	90	75	98	100	97	100
Doncaster and Bassetlaw Hospitals NHS Foundation Trust (Doncaster Royal Infirmary & Montagu Hospital)	60	80	50	98	24	96	75	100	63	98
Doncaster and Bassetlaw Hospitals NHS Foundation Trust (Bassetlaw District General Hospital)	28	100	70	90	95	100	95	100	95	94
Harrogate and District NHS Foundation Trust	59	71	71	90	68	76	80	69	3	90
Hull and East Yorkshire Hospitals NHS Trust	92	78	82	75	55	48	82	75	61	89
Leeds Teaching Hospitals NHS Trust	94	71	61	72	63	82	77	62	30	80
Mid Yorkshire Hospitals NHS Trust	86	71	50	89	90	75	81	81	56	97
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust (Diana Princess of Wales Hospital)	52	76	59	95	100	90	95	100	86	93
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust (Scunthorpe General Hospital)	38	73	66	100	97	65	86	96	77	100

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Rotherham NHS Foundation Trust	60	66	82	98	96	84	26	98	95	80
Scarborough and North East Yorkshire Healthcare NHS Trust	61	86	80	76	63	90	64	92	68	89
Sheffield Teaching Hospitals NHS Foundation Trust	93	82	84	79	54	73	67	90	55	99
York Hospitals NHS Foundation Trust	59	78	58	83	74	43	66	61	16	89
<b>Northern Ireland</b>										
Belfast Health and Social Care Trust (Belfast City Hospital)	42	72	74	89	85	62	62	94	64	100
Belfast Health and Social Care Trust (Royal Group of Hospitals)	35	70	63	81	62	55	81	84	71	93
Belfast Health and Social Care Trust (Mater Hospital)	41	82	63	89	73	50	86	97	94	88
South Eastern Health and Social Care Trust (Lagan Valley Hospital)	25	40	64	95	73	65	46	72	72	87
South Eastern Health and Social Care Trust (Ulster Community and Hospitals)	60	65	66	90	86	88	71	92	80	92
South Eastern Health and Social Care Trust (Downe Hospital)	22	80	38	72	63	62	50	79	64	89
Northern Health and Social Care Trust (Antrim Area Hospital)	38	21	34	56	54	47	50	65	29	70
Northern Health and Social Care Trust (Causeway Hospital)	21	44	80	85	85	83	33	100	79	95
Southern Health and Social Care Trust (Craigavon Area)	50	76	42	86	80	86	52	97	81	91
Southern Health and Social Care Trust (Daisy Hill Hospital)	42	68	48	90	90	75	95	97	65	95
Western Health and Social Care Trust (Southern Sector - Erne)	51	100	69	100	100	88	96	100	100	96
Western Health and Social Care Trust (Altnagelvin Hospitals)	30	54	57	97	26	97	79	100	93	88
<b>Wales</b>										
Abertawe Bro Morgannwg University Health Board (Princess of Wales Hospital)	51	59	60	65	61	50	3	75	60	98
Abertawe Bro Morgannwg University Health Board (Morrison Hospital and Singleton Hospital)	61	98	87	89	50	85	96	96	92	96
Hywel Dda Health Board (West Wales General Hospital)	33	52	82	70	7	39	32	86	42	90
Hywel Dda Health Board (Prince Philip Hospital)	38	82	61	67	26	56	71	91	52	96

Trust name (site name)	Number of cases in the audit	Screening for swallowing disorders within 24hrs after admission	Brain scan within 24hours of stroke	Physiotherapy assessment within 72hours of admission	Occupational Therapy assessment within 4 days of admission	Patient weighed during admission	Patient's mood assessed during admission	Rehabilitation goals agreed by discharge	Rehabilitation goals agreed within 5 days	Aspirin or clopidogrel by 48 hours after stroke
<b>National results</b>	<b>11353</b>	<b>83%</b>	<b>70%</b>	<b>91%</b>	<b>83%</b>	<b>85%</b>	<b>80%</b>	<b>94%</b>	<b>78%</b>	<b>93%</b>
Hywel Dda Health Board (Withybush General Hospital)	44	82	60	83	13	76	87	96	81	100
Hywel Dda Health Board (Bronglais General Hospital)	31	85	69	88	68	85	17	83	26	91
Betsi Cadwaladr University Health Board (Ysbyty Gwynedd)	54	98	43	90	39	69	98	100	83	98
Betsi Cadwaladr University Health Board (Glan Clwyd District General Hospital)	58	98	52	81	47	87	15	87	58	90
Betsi Cadwaladr University Health Board (Wrexham Maelor Hospital)	47	93	53	95	71	95	74	94	82	80
Aneurin Bevan Health Board (Nevell Hall Hospital)	60	81	37	98	86	89	61	100	84	90
Aneurin Bevan Health Board (St Woolos Hospital, Royal Gwent and Caerphilly District Miner's Hospital)	80	79	55	92	87	88	91	100	98	93
Cardiff and Vale University Health Board (University Hospital Wales)	44	53	74	92	74	83	60	94	81	89
Cardiff and Vale University Health Board (Llandough Hospital)	37	42	53	82	73	78	54	100	84	93
Cwm Taf Health Board (Prince Charles Hospital)	55	70	82	92	22	98	79	96	81	96
Cwm Taf Health Board (Royal Glamorgan Hospital)	57	44	50	93	78	98	78	100	81	83
<b>Islands</b>										
Isle of Man Department of Health and Social Security	23	71	55	100	75	94	46	92	77	80
Health & Social Services Department (Guernsey)	24	43	48	50	20	95	68	67	27	81
States of Jersey Health & Social Services	19	60	68	73	73	88	64	43	29	80

**Table 4B** is a continuation of Table 4A. The overall position is calculated from the total process score from each site. This is an aggregated score across all domains with the top 25% of scores represented by the symbol , the middle half designated by the diamond  and the bottom 25% designated with the symbol .

The composition of this score is defined in the Presentation of Results section of the report (pg 16). Not all standards comprising the total process score are reported in this chapter.

If there has been a change in configuration of sites between rounds N/A is given for the appropriate time period.

**Table 4B** below gives the percentage of applicable patients receiving each of the following standards:

- Patients treated for 90% of stay in a Stroke Unit
- swallowing assessment by a speech and language therapist within 72 hours
- Patients initially admitted to a general assessment unit (*please note that a high score denotes less good patient care*)
- Patients initially admitted to a stroke unit
- Patients admitted to a stroke unit within 4 hours
- Discussion with patients about their diagnosis
- Percentage of patients receiving 9 and 12 indicators
- Overall position in 2008 and 2010.



Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
East Midlands											
Chesterfield Royal Hospital NHS Foundation Trust	83	93	10	87	98	85	10	65	100	◆	✓
Derby Hospitals NHS Foundation Trust	70	93	53	41	80	44	29	60	38	◆	◆
Kettering General Hospital NHS Foundation Trust	53	93	95	2	92	27	0	29	0	✗	◆
Northampton General Hospital NHS Trust	68	77	77	18	72	12	5	42	0	◆	✗
Nottingham University Hospitals NHS Trust	85	73	18	79	65	82	10	41	21	◆	◆
Sherwood Forest Hospitals NHS Foundation Trust	64	83	45	54	79	46	0	25	0	◆	◆
United Lincolnshire Hospitals NHS Trust (Pilgrim Hospital)	63	90	26	70	34	47	0	13	5	✗	✗
United Lincolnshire Hospitals NHS Trust (Grantham and District Hospital)	27	71	95	0	47	0	NA	0	0	✗	✗
United Lincolnshire Hospitals NHS Trust (Lincoln County)	38	98	89	11	85	11	0	32	6	◆	◆
University Hospitals of Leicester NHS Trust in collaboration with Leicestershire County and Rutland PCT	46	71	81	16	86	33	NA	33	16	NA	◆
East of England											
Basildon and Thurrock University Hospitals NHS Foundation Trust	40	85	68	15	79	7	7	20	0	✗	◆
Bedford Hospital NHS Trust	72	85	55	38	98	43	4	30	0	◆	✓
Cambridge University Hospitals NHS Foundation Trust	72	91	23	54	100	67	45	48	25	◆	✓
Colchester Hospital University NHS Foundation Trust	63	95	75	18	95	20	7	36	30	◆	◆
East & North Hertfordshire NHS Trust	37	56	73	23	95	10	10	13	0	◆	✗
Hinchingbrooke Health Care NHS Trust	59	77	68	23	72	25	0	38	11	✗	◆

\* a high score denotes less good patient care



Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Ipswich Hospital NHS Trust	34	91	97	0	51	6	0	8	0	◆	✗
James Paget University Hospitals NHS Foundation Trust	46	71	80	15	91	16	12	20	0	◆	◆
Luton and Dunstable Hospital NHS Foundation Trust	83	98	25	72	100	65	5	24	16	◆	✓
Mid Essex Hospital Services NHS Trust	70	67	93	3	74	33	7	17	0	✗	✗
Norfolk & Norwich University Hospitals NHS Foundation Trust	55	80	81	18	100	21	0	37	17	✗	◆
Peterborough and Stamford Hospitals NHS Foundation Trust	60	70	33	63	46	56	0	7	0	◆	✗
Princess Alexandra Hospital NHS Trust	70	98	92	3	100	55	11	68	3	◆	✓
Queen Elizabeth Hospital King's Lynn NHS Trust	44	88	92	5	86	17	11	14	13	◆	◆
Southend University Hospital NHS Foundation Trust	87	94	25	66	63	59	40	24	14	✓	◆
West Hertfordshire Hospitals NHS Trust	69	100	63	34	83	34	28	32	0	✓	✓
West Suffolk Hospital NHS Trust	28	96	62	23	100	36	4	31	22	◆	◆
London											
Barking Havering and Redbridge University Hospitals NHS Trust	71	99	41	54	79	52	NA	60	33	NA	◆
Barnet and Chase Farm Hospitals NHS Trust	60	94	58	31	84	32	NA	52	20	NA	◆
Barts and The London NHS Trust jointly with Tower Hamlets PCT	88	92	21	72	82	82	45	57	14	✓	◆
Chelsea and Westminster Hospital NHS Foundation Trust	83	100	43	57	100	57	73	77	58	✓	✓
Epsom and St Helier University Hospitals NHS Trust (St Helier Hospital)	77	78	63	33	63	33	26	35	18	✓	◆
Epsom and St Helier University Hospitals NHS Trust (Epsom General Hospital)	56	67	44	35	47	37	0	7	9	✗	✗
Guy's and St Thomas' Hospital NHS Foundation Trust	86	89	7	85	84	82	54	50	33	✓	✓

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72 hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Hillingdon Hospital NHS Trust	72	100	52	40	100	49	18	76	23	◆	✓
Homerton University Hospital NHS Foundation Trust	64	100	41	49	79	39	36	50	0	◆	◆
Imperial College Healthcare NHS Trust	65	89	20	72	100	68	44	45	50	✓	✓
King's College Hospital NHS Foundation Trust	95	100	3	95	98	88	84	86	83	✓	✓
Kingston Hospital NHS Trust	68	84	79	21	90	26	24	6	0	✓	◆
Lewisham Healthcare NHS Trust	76	95	40	55	98	53	26	59	20	✓	✓
Croydon Health Services NHS Trust	91	98	4	81	100	81	10	64	60	◆	✓
Newham University Hospital NHS Trust	86	100	55	33	100	41	29	64	75	✓	✓
North Middlesex University Hospital NHS Trust & Haringey PCT combined	78	94	39	54	59	44	17	21	6	◆	◆
North West London Hospitals NHS Trust (Northwick Park Hospital)	91	100	7	92	98	87	40	53	38	✓	✓
Royal Free Hampstead NHS Trust	78	100	55	43	100	53	78	67	60	✓	✓
South London Healthcare NHS Trust	50	55	61	32	53	20	NA	0	0	NA	✗
St George's Healthcare NHS Trust	90	87	7	90	100	97	47	79	85	✓	✓
University College London Hospitals NHS Foundation Trust	89	100	0	95	100	95	45	58	57	✓	✓
West Middlesex University Hospital NHS Trust	77	78	31	65	88	57	9	50	50	◆	◆
Whipps Cross University Hospital NHS Trust	46	89	63	29	97	32	16	47	13	◆	✓
North East											
City Hospitals Sunderland NHS Foundation Trust	75	27	25	70	29	72	0	4	0	◆	✗
County Durham and Darlington NHS Foundation Trust (University Hospital North Durham)	59	92	57	36	63	33	12	27	11	✗	✗
County Durham and Darlington NHS Foundation Trust (Darlington	64	93	50	48	66	50	NA	11	11	NA	✗

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Memorial and Bishop Auckland General Hospital)											
Gateshead Health NHS Foundation Trust	70	87	80	20	84	29	0	32	18	◆	◆
Newcastle upon Tyne Hospitals NHS Foundation Trust	72	91	71	26	92	49	8	41	25	◆	◆
North Tees and Hartlepool NHS Foundation Trust (University Hospital of Hartlepool)	88	100	19	81	76	81	18	40	100	✓	✓
North Tees and Hartlepool NHS Foundation Trust (University Hospital of North Tees)	89	100	8	88	100	90	52	52	63	✓	✓
Northumbria Healthcare NHS Foundation Trust (Hexham Hospital)	90	71	17	71	69	44	36	27	25	✓	✗
Northumbria Healthcare NHS Foundation Trust (North Tyneside General Hospital)	68	91	34	47	83	36	33	64	50	✓	◆
Northumbria Healthcare NHS Foundation Trust (Wansbeck General Hospital)	76	68	53	44	76	42	43	44	18	✓	◆
South Tees Hospitals NHS Foundation Trust (The James Cook University Hospital) in collaboration with Middlesbrough PCT and Redcar and Cleveland PCT	84	100	18	80	93	72	14	69	36	◆	✓
South Tees Hospitals NHS Foundation Trust (Friarage Hospital) in collaboration with Rutson Rehabilitation Unit (North Yorkshire & York Primary Care Trust)	53	86	83	17	88	17	14	33	50	✗	✓
South Tyneside NHS Foundation Trust	73	94	48	48	89	42	0	55	29	◆	◆
North West											
Aintree University Hospitals NHS Foundation Trust	52	100	30	53	96	43	44	55	44	✓	✓
Blackpool, Fylde & Wyre Hospitals NHS Foundation Trust	60	81	49	43	74	36	0	38	14	✗	◆
Central Manchester and Manchester Children's University Hospital NHS Trust	52	96	76	16	93	17	7	25	24	✗	◆

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Countess of Chester Hospital NHS Foundation Trust	62	96	23	72	72	22	31	42	27	◆	◆
East Cheshire NHS Trust	78	86	30	65	92	62	6	74	14	◆	◆
East Lancashire Hospitals NHS Trust	26	74	88	8	80	61	0	0	0	✗	✗
Lancashire Teaching Hospitals NHS Foundation Trust (Chorley and South Ribble District General Hospital)	49	75	88	13	36	19	NA	29	0	✗	✗
Lancashire Teaching Hospitals NHS Foundation Trust (Royal Preston Hospital)	48	86	67	29	47	43	19	52	6	◆	◆
Mid Cheshire Hospitals NHS Foundation Trust	50	87	42	52	61	49	0	52	11	✗	◆
Warrington and Halton Hospitals NHS Foundation Trust	65	95	58	40	97	42	10	52	29	◆	✓
North Cumbria University Hospitals NHS Trust (Cumberland Infirmary)	67	72	65	30	85	28	20	41	0	◆	◆
North Cumbria University Hospitals NHS Trust (West Cumberland Hospital)	57	90	36	59	88	61	11	26	6	◆	◆
Pennine Acute Hospitals NHS Trust (North Manchester General Hospital)	45	96	89	2	89	5	9	26	0	◆	◆
Pennine Acute Hospitals NHS Trust (Royal Oldham Hospital)	75	89	69	30	94	28	0	44	25	✓	✓
Pennine Acute Hospitals NHS Trust (Fairfield General Hospital and Rochdale Infirmary)	74	97	62	33	98	36	NA	70	27	NA	✓
Royal Bolton Hospital NHS Foundation Trust	58	96	86	12	93	13	47	44	11	✓	✓
Royal Liverpool & Broadgreen University Hospitals NHS Trust	74	91	95	3	100	46	18	47	0	✓	✓
Salford Royal NHS Foundation Trust	98	94	5	95	81	93	44	87	83	✓	✓
Southport and Ormskirk Hospital NHS Trust	57	83	57	27	34	24	4	33	29	✓	◆
St Helens & Knowsley Hospitals NHS Trust	64	97	47	53	100	47	22	22	16	✓	◆

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Stockport NHS Foundation Trust	62	98	68	32	89	23	0	41	27	◆	✓
Tameside Hospital NHS Foundation Trust in collaboration with NHS Tameside and Glossop	65	78	85	15	80	22	NA	47	0	NA	✗
Trafford Healthcare NHS Trust	79	76	7	93	94	93	0	55	33	◆	◆
University Hospital of South Manchester NHS Foundation Trust	44	71	67	25	89	22	18	32	20	◆	◆
University Hospitals of Morecambe Bay NHS Foundation Trust (Furness General Hospital)	67	96	96	4	71	29	0	48	0	✗	◆
University Hospitals of Morecambe Bay NHS Foundation Trust (Royal Lancaster Infirmary & Westmorland General Hospital)	41	89	90	3	28	11	NA	23	4	NA	✗
Wirral University Teaching Hospital NHS Foundation Trust	65	73	65	31	98	33	48	54	20	✓	✓
Wrightington, Wigan and Leigh NHS Foundation Trust	66	77	62	32	60	31	45	27	0	✓	✗
South Central											
Basingstoke and North Hampshire NHS Foundation Trust	59	54	83	12	89	15	29	11	0	✓	◆
Buckinghamshire Healthcare NHS Trust	57	83	60	33	78	18	NA	14	11	NA	◆
Heatherwood and Wexham Park Hospitals NHS Foundation Trust	33	85	80	7	59	7	7	13	0	✗	✗
Isle of Wight NHS Primary Care Trust	17	100	98	0	95	2	0	0	0	◆	◆
Milton Keynes Hospital NHS Foundation Trust	38	97	100	0	100	0	31	25	0	✓	✓
Oxford Radcliffe Hospitals NHS Trust (Horton General Hospital)	73	84	85	15	67	15	0	36	0	✗	✗
Oxford Radcliffe Hospitals NHS Trust (John Radcliffe Hospital)	73	86	30	55	98	55	0	53	36	✗	◆
Portsmouth Hospitals NHS Trust jointly with Hampshire and Portsmouth City PCTs	36	90	91	5	79	13	0	30	0	◆	◆
Royal Berkshire NHS Foundation Trust	46	98	83	7	85	18	13	32	4	◆	◆

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72 hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Southampton University Hospitals NHS Trust in collaboration with Hampshire PCT & Southampton City PCT	45	83	69	17	77	22	NA	9	5	NA	✗
Winchester and Eastleigh Healthcare NHS Trust	70	98	47	47	98	53	20	52	26	✓	✓
South East Coast											
Ashford and St Peter's Hospitals NHS Trust	79	100	20	73	57	64	13	44	14	◆	◆
Brighton & Sussex University Hospitals NHS Trust (Royal Sussex County Hospital Brighton)	76	98	55	38	100	46	30	54	26	✓	✓
Brighton & Sussex University Hospitals NHS Trust (Princess Royal Hospital Haywards Heath)	61	100	39	51	96	40	0	22	20	◆	◆
Dartford & Gravesham NHS Trust	48	78	54	41	88	40	3	21	NA	✗	◆
East Kent University Hospitals NHS Foundation Trust (William Harvey Hospital)	59	86	59	34	63	39	10	56	21	✓	◆
East Kent University Hospitals NHS Foundation Trust (Kent & Canterbury Hospital)	76	95	22	72	93	72	27	56	40	✓	✓
East Kent University Hospitals NHS Foundation Trust (Queen Elizabeth The Queen Mother Hospital)	63	95	48	48	83	48	28	57	29	◆	◆
East Sussex Hospitals NHS Trust (Eastbourne District General Hospital)	27	83	92	6	33	2	18	11	0	◆	✗
East Sussex Hospitals NHS Trust (Conquest Hospital)	49	76	67	17	64	14	8	19	0	◆	✗
Frimley Park Hospital NHS Foundation Trust	67	79	50	39	50	15	3	67	13	✗	◆
Maidstone and Tunbridge Wells NHS Trust (Kent & Sussex Hospital)	60	83	49	47	80	40	0	39	20	✗	◆
Maidstone and Tunbridge Wells NHS Trust (Maidstone Hospital)	71	84	46	52	32	43	0	15	0	◆	◆
Medway Maritime Hospital, Medway PCT and Swale PCT	76	79	44	51	42	54	5	44	10	✗	◆

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Royal Surrey County Hospital NHS Foundation Trust	62	100	48	33	100	33	23	58	44	✓	✓
Surrey & Sussex Healthcare NHS Trust	64	85	37	54	71	43	5	17	17	◆	◆
Western Sussex Hospitals NHS Trust (St Richard's Hospital)	70	97	83	13	87	47	19	48	0	◆	◆
Western Sussex Hospitals NHS Trust (Worthing & Southlands Hospitals)	71	63	38	58	91	59	0	7	0	✗	◆
South West											
Dorset County Hospital NHS Foundation Trust	33	74	63	15	72	13	11	13	11	◆	✗
Gloucestershire Hospitals NHS Foundation Trust (Gloucestershire Royal Hospital)	49	78	73	20	97	22	12	19	9	◆	◆
Gloucestershire Hospitals NHS Foundation Trust (Cheltenham General Hospital)	35	90	83	12	98	15	5	17	0	◆	✓
Great Western Hospitals NHS Foundation Trust (in collaboration with Swindon PCT)	41	61	83	12	91	34	0	34	0	✗	◆
North Bristol NHS Trust	74	77	46	51	76	65	29	24	0	◆	◆
Northern Devon Healthcare NHS Trust	57	100	35	63	100	63	0	45	27	◆	✓
Plymouth Hospitals NHS Trust in collaboration with Plymouth PCT	51	100	51	44	46	48	NA	6	0	NA	◆
Poole Hospital NHS Foundation Trust	64	95	21	72	89	66	12	10	0	◆	◆
Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	59	77	65	17	66	12	19	28	8	✓	◆
Royal Cornwall Hospitals NHS Trust	56	100	97	0	89	13	0	13	0	✗	◆
Royal Devon and Exeter NHS Foundation Trust in collaboration with Devon Primary Care Trust	69	74	63	37	91	62	23	45	14	◆	✓
Royal United Hospital Bath NHS Trust in collaboration with Bath &	75	80	35	60	86	60	20	39	33	✓	✓

\* a high score denotes less good patient care



Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
North East Somerset PCT and Wiltshire PCT											
Salisbury NHS Foundation Trust	73	92	52	45	100	45	10	19	0	✓	✓
South Devon Healthcare NHS Foundation Trust combined with Devon PCT	39	97	98	2	49	31	24	16	0	✓	◆
Taunton and Somerset NHS Foundation Trust	51	70	85	13	57	15	20	36	0	✗	◆
University Hospitals Bristol NHS Foundation Trust	68	58	35	60	82	54	25	25	0	◆	◆
Weston Area Health NHS Trust	48	60	93	4	89	9	NA	35	0	✗	✗
Yeovil District Hospital NHS Foundation Trust	33	78	90	7	98	7	8	9	0	◆	✗
West Midlands											
Burton Hospitals NHS Foundation Trust	74	94	68	22	78	28	8	21	0	◆	◆
Dudley Group of Hospitals NHS Foundation Trust	73	100	53	45	98	45	5	38	36	◆	◆
George Eliot Hospital NHS Trust	65	85	40	53	94	53	0	31	17	◆	✓
Heart of England NHS Foundation Trust (Good Hope Hospital)	40	79	91	3	62	3	0	20	0	◆	✗
Heart of England NHS Foundation Trust (Birmingham Heartlands and Solihull Hospitals)	45	100	72	18	100	18	17	24	17	✓	◆
Hereford Hospitals NHS Trust	38	93	63	30	81	32	19	12	5	◆	✗
University Hospital of North Staffordshire NHS Trust combined with North Staffordshire Combined Healthcare NHS Trust	47	89	85	9	55	9	17	27	0	◆	◆
Royal Wolverhampton Hospitals NHS Trust jointly with Wolverhampton Health Care NHS Trust	45	78	71	23	78	26	0	32	15	◆	◆
Sandwell and West Birmingham Hospitals NHS Trust (Sandwell District Hospital)	81	97	27	67	98	60	16	38	42	◆	✓

\* a high score denotes less good patient care



Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Sandwell and West Birmingham Hospitals NHS Trust (City Hospital)	73	100	38	50	86	45	16	52	50	◆	✓
Shrewsbury & Telford Hospital NHS Trust	71	93	42	57	31	55	7	31	7	✗	✗
South Warwickshire NHS Foundation Trust	52	88	75	23	75	28	8	4	6	✗	✗
University Hospitals Birmingham NHS Foundation Trust in collaboration with South Birmingham Primary Care Trust	57	81	70	27	74	25	NA	26	29	NA	◆
University Hospitals Coventry and Warwickshire NHS Trust	65	89	42	52	85	51	32	13	18	✓	✗
Walsall Hospitals NHS Trust	71	93	37	58	84	58	5	13	7	◆	◆
Worcestershire Acute Hospitals NHS Trust (Alexandra Hospital Redditch)	76	61	43	55	92	56	0	19	10	✗	◆
Worcestershire Acute Hospitals NHS Trust (Worcester Royal Hospital)	33	87	77	20	66	8	0	10	0	✗	✗
Yorkshire and the Humber											
Airedale NHS Trust	73	79	2	93	88	92	19	42	25	✓	◆
Barnsley Hospital NHS Foundation Trust	76	94	27	68	98	71	0	32	38	◆	✓
Bradford Teaching Hospitals NHS Foundation Trust	67	67	43	50	89	54	12	7	8	◆	✗
Calderdale and Huddersfield NHS Foundation Trust	93	97	15	82	100	81	0	35	38	◆	✓
Doncaster and Bassetlaw Hospitals NHS Foundation Trust (Doncaster Royal Infirmary & Montagu Hospital)	46	96	70	23	83	24	0	8	17	◆	◆
Doncaster and Bassetlaw Hospitals NHS Foundation Trust (Bassetlaw District General Hospital)	39	89	100	0	100	43	9	30	0	◆	✓
Harrogate and District NHS Foundation Trust	71	76	34	64	79	64	48	27	0	◆	✗
Hull and East Yorkshire Hospitals NHS Trust	37	67	100	0	47	17	25	8	0	✓	✗
Leeds Teaching Hospitals NHS Trust	56	64	61	27	74	32	0	9	7	◆	✗

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Mid Yorkshire Hospitals NHS Trust	57	65	62	33	61	36	0	13	0	✗	◆
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust (Diana Princess of Wales Hospital)	76	80	29	60	92	63	0	38	40	✗	◆
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust (Scunthorpe General Hospital)	59	90	68	24	61	32	10	36	18	◆	◆
Rotherham NHS Foundation Trust	81	45	32	65	63	67	34	9	0	◆	◆
Scarborough and North East Yorkshire Healthcare NHS Trust	63	82	66	25	92	48	10	43	29	◆	◆
Sheffield Teaching Hospitals NHS Foundation Trust	56	91	87	8	88	8	44	17	5	◆	◆
York Hospitals NHS Foundation Trust	38	85	54	44	21	36	20	19	7	◆	✗
Northern Ireland											
Belfast Health and Social Care Trust (Belfast City Hospital)	46	76	64	21	67	17	7	21	14	✓	◆
Belfast Health and Social Care Trust (Royal Group of Hospitals)	65	81	37	46	92	9	0	18	17	◆	✗
Belfast Health and Social Care Trust (Mater Hospital)	14	96	0	12	96	7	0	18	17	◆	◆
South Eastern Health and Social Care Trust (Lagan Valley Hospital)	16	53	92	4	21	8	0	0	0	✗	✗
South Eastern Health and Social Care Trust (Ulster Community and Hospitals)	49	100	45	42	69	19	14	14	17	✗	◆
South Eastern Health and Social Care Trust (Downe Hospital)	71	80	0	86	56	64	NA	0	0	NA	✗
Northern Health and Social Care Trust (Antrim Area Hospital)	33	37	79	8	60	11	NA	0	0	NA	✗
Northern Health and Social Care Trust (Causeway Hospital)	26	77	71	10	82	5	NA	8	0	◆	✗
Southern Health and Social Care Trust (Craigavon Area)	47	90	40	58	58	40	0	13	0	◆	✗
Southern Health and Social Care Trust (Daisy Hill Hospital)	83	100	5	79	95	76	44	42	60	✓	✓
Western Health and Social Care Trust (Southern Sector - Erne)	82	100	29	65	100	71	53	54	78	✓	✓

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Western Health and Social Care Trust (Altnagelvin Hospitals)	52	85	37	47	95	43	25	0	0	◆	◆
Wales											
Abertawe Bro Morgannwg University Health Board (Princess of Wales Hospital)	27	70	94	2	41	6	NA	0	0	◆	✗
Abertawe Bro Morgannwg University Health Board (Morriston Hospital and Singleton Hospital)	30	59	62	8	100	8	NA	11	20	NA	◆
Hywel Dda Health Board (West Wales General Hospital)	17	53	94	0	42	13	NA	0	0	✗	✗
Hywel Dda Health Board (Prince Philip Hospital)	21	87	100	0	79	5	NA	0	0	✗	✗
Hywel Dda Health Board (Withybush General Hospital)	47	100	93	7	97	16	6	0	0	◆	◆
Hywel Dda Health Board (Bronglais General Hospital)	73	92	16	61	61	43	0	10	0	✗	✗
Betsi Cadwaladr University Health Board (Ysbyty Gwynedd)	37	90	98	2	100	15	NA	4	0	◆	◆
Betsi Cadwaladr University Health Board (Glan Clwyd District General Hospital)	34	89	95	2	95	2	8	0	0	◆	✗
Betsi Cadwaladr University Health Board (Wrexham Maelor Hospital)	48	88	94	2	94	4	0	18	0	◆	◆
Aneurin Bevan Health Board (Nevell Hall Hospital)	48	100	80	17	98	33	29	13	0	◆	◆
Aneurin Bevan Health Board (St Woolos Hospital, Royal Gwent and Caerphilly District Miner's Hospital)	21	88	91	5	98	5	17	12	13	◆	◆
Cardiff and Vale University Health Board (University Hospital Wales)	20	86	93	0	74	2	0	25	0	✗	◆
Cardiff and Vale University Health Board (Llandough Hospital)	32	57	100	0	89	5	17	13	0	✗	◆
Cwm Taf Health Board (Prince Charles Hospital)	50	92	85	9	83	13	0	10	14	✗	◆
Cwm Taf Health Board (Royal Glamorgan Hospital)	55	89	95	2	93	2	0	13	0	✗	◆

\* a high score denotes less good patient care

Trust name (site name)	Patient spent at least 90% of stay on a stroke unit	Swallow assessment within 72hours	Patient initially admitted to a general assessment unit *	Patient initially admitted to a stroke unit	Diagnosis discussed with patient	Admitted to stroke unit within 4 hours	Received all key 9 indicators in 2008	Received all key 9 indicators in 2010	Received all key 12 indicators in 2010	Overall position 2008	Overall position 2010
National results	60%	86%	57%*	36%	80%	38%	17%	32%	16%		
Islands											
Isle of Man Department of Health and Social Security	68	63	22	39	57	74	NA	13	25	✗	◆
Health & Social Services Department (Guernsey)	0	67	0	0	76	0	NA	0	0	◆	✗
States of Jersey Health & Social Services	0	77	63	0	54	0	NA	0	0	✗	✗

\* a high score denotes less good patient care

## APPENDIX 1

### Membership of Intercollegiate Working Party for Stroke during Round 7 of National Sentinel Stroke Audit

#### Chair

Dr Anthony Rudd, Consultant Stroke Physician, Guy's and St Thomas' NHS Foundation Trust

#### ACPIN

Mrs Nicola Hancock, Post-graduate Research Student, University of East Anglia

#### AGILE

Miss Louise Briggs, AHP Therapy Consultant, St George's Hospital London

#### Association of British Neurologists

Dr Gavin Young, Consultant Neurologist, The James Cook University Hospital

#### British Association of Social Workers

Professor Jill Manthorpe, Professor of Social Work, King's College London

#### British Association of Stroke Physicians

Dr Neil Baldwin, Consultant Stroke Physician, North Bristol NHS Trust

#### British Association of Stroke Physicians

Dr Peter Humphrey, Consultant Neurologist, Walton Centre for Neurology & Neurosurgery

#### British Society of Rehabilitation Medicine

Professor Derick Wade, Consultant in Rehabilitation Medicine, The Oxford Centre for Enablement

#### British Dietetic Association

Ms Cheryl Hookway, Senior Specialist Dietitian – Stroke, Imperial College Healthcare NHS Trust

#### British Dietetic Association

Dr Elizabeth Weekes, Clinical Expert in Disease-Related Malnutrition and Research Lead, Guy's & St Thomas' NHS Foundation Trust

#### British Geriatrics Society

Professor Helen Rodgers, Professor of Stroke Care, Newcastle University

#### British Primary Care Neurology Society

Dr Helen Hosker, Clinical Commissioning Lead for Stroke, NHS Manchester

#### British Psychological Society

Dr Peter Knapp, Senior Lecturer, University of Leeds

#### British Psychological Society

Dr Audrey Bowen, Senior Lecturer in Psychology, University of Manchester

#### British Society of Neuroradiologists

Dr Andrew Clifton, Interventional Neuroradiologist, St George's Healthcare NHS Trust

#### Chartered Society of Physiotherapy

Dr Cherry Kilbride, Lecturer in Physiotherapy, Brunel University West London

#### College of Occupational Therapists and Special Section Neurological Practice

Dr Judi Edmans, Senior Research Fellow, University of Nottingham

#### College of Occupational Therapists and Special Section Neurological Practice

Dr Avril Drummond, Associate Professor and Reader in Rehabilitation Research and Deputy Director Trent Local Network for Stroke, University of Nottingham

#### Connecting for Health

Dr Helen Newton, Lead Consultant for Stroke, Swindon and Marlborough NHS Trust

#### Faculty of Public Health

Professor Charles Wolfe Consultant of Public Health Medicine, King's College London

NHS Stroke Improvement Programme

Dr Damian Jenkinson, National Clinical Lead NHS Stroke Improvement Programme,  
Royal Bournemouth and Christchurch NHS Foundation Trust

Qualitative Research Advice

Dr Chris McKevitt, Qualitative Stroke Researcher and Reader in Social Science and Health, King's  
College London

Royal College of Nursing

Mr Stephen Cross, Stroke Services Manager, Tameside and Glossop PCT

Royal College of Nursing

Ms Amanda Jones, Stroke Nurse Consultant, Sheffield Teaching Hospitals NHS  
Foundation Trust

Royal College of Nursing

Dr Lin Perry, Senior Research Fellow for Cardiovascular Disease and Stroke, Newcastle Institute  
of Public Health/Hunter Medical Research Institute, Australia

Royal College of Physicians

Professor Martin M Brown, Professor of Stroke Medicine, UCL Institute of Neurology, The  
National Hospital for Neurology and Neurosurgery, Queen Square, London

Royal College of Radiologists

Dr Philip White, Consultant Interventional Neuroradiologist, Western General Hospital,  
Edinburgh

Royal College of Speech & Language Therapists

Ms Rosemary Cunningham, Speech & Language Therapist, Royal Derby Hospital (Derbyshire  
Community Health Services)

Royal College of Speech & Language Therapists

Ms Stephanie Ticehurst, Speech & Language Therapist Frenchay Hospital Bristol

Royal Pharmaceutical Society

Mr Derek Taylor, Deputy Chief Pharmacist, Liverpool Heart & Chest Hospital

Speakability

Ms Melanie Derbyshire, Chief Executive, Speakability (Action for Dysphasic Adults)

Stroke Association

Mr Jon Barrick, Chief Executive, Stroke Association

Stroke Association

Mr Joe Korner, Director of Communications, Stroke Association

College of Paramedics

Mr David Davis, Stroke Lead, South East Coast Ambulance Service

The Cochrane Stroke Group

Professor Peter Langhorne, Senior Lecturer in Geriatric Medicine University of Glasgow

UK Swallowing Research Group

Dr Maxine Power, Associate Director of Quality Improvement, Salford Royal Hospitals NHS  
Foundation Trust

Welsh Stroke Physicians

Dr Anne Freeman, Consultant Stroke Physician, Royal Gwent Hospital, Wales

**Associate Directors**

Dr Geoff Cloud, Consultant Stroke Physician, Honorary Senior Lecturer Clinical Neuroscience, St  
George's Hospital London

Dr Martin James, Consultant Stroke Physician, Royal Devon and Exeter Hospital

Dr Philippa Tyrrell, Senior Lecturer / Honorary Consultant Stroke Medicine, University of  
Manchester

**APPENDIX 2****ROYAL COLLEGE OF PHYSICIANS NATIONAL SENTINEL STROKE AUDIT 2010****CLINICAL AUDIT PROFORMA**

The patient should be selected from the first 60 consecutive cases (or 10% if annual number of stroke admissions exceeds 600) with a primary diagnosis of stroke (ICD 10 codes: I61, I63 and I64 or ascertained via other methods) admitted to the Site between 1st April – 30th June 2010. See accompanying help booklet for full methodology and data definitions.

**SITE CODE:** [      ]

I. Is your hospital the first hospital to which the patient with a new stroke was admitted or the location where the patient who suffered the stroke was already an inpatient? Yes ☐ No ☐

- i. If YES, did you repatriate this patient to a hospital with which you have a formal agreement within 72 hours? Yes ☐ No ☐

Auditor Discipline(s) (tick all that apply)

A1) Clinical Audit ☐ Medicine ☐ Nursing ☐ Therapy ☐  
Other ☐ Specify \_\_\_\_\_

**DEMOGRAPHIC INFORMATION**

B1) Patient audit number: [      ]

B2) Date of Birth: [      /      /      ] (dd/mm/yyyy)

B3) Gender: Male ☐ Female ☐

B4) Was the patient already an inpatient at the time of stroke? Yes ☐ No ☐  
If yes omit questions 1.7 and 1.7i

*Only answer B5 if this patient was repatriated to a partner acute hospital within 72 hours*

B5(i) Site code of collaborating acute (second) hospital to which patient is repatriated: [      ]

B5(ii) Date of transfer to acute (second) unit [      /      /      ] (dd/mm/yyyy)

**SECTION 1 STROKE ONSET AND HOSPITAL STAY**

Please make every effort to find the date and time of stroke

1.1 Date of stroke: [     /     /     ] (dd/mm/yyyy)

This date is precise ☐

This date is a best estimate ☐

1.1i Time of onset of stroke: [     :     ] (HH:MM, 24 hr clock)

This time is precise ☐

This time is a best estimate ☐ Not known ☐

1.1ii If time is not known state the reason:

Not known because stroke occurred during sleep ☐

Not known for other reason ☐

1.2 Date of admission: [     /     /     ] (dd/mm/yyyy)

NB the patient should have been admitted between 1<sup>st</sup> April 2010 and 30<sup>th</sup> June 2010

1.2i Time of admission: [     :     ] (HH:MM, 24 hr clock)

Not known ☐

1.2ii Age at admission: [     ] years (This will be calculated automatically when you enter dates online) *NB must be >16 years*

1.3 Did the patient die whilst still an inpatient? Yes ☐ No ☐

1.3i If No, at the time of audit is the patient

still in hospital for this episode? ☐

been discharged? ☐

1.4 Date of discharge (If discharged alive): [     /     /     ] (dd/mm/yyyy)

1.4i Length of stay to discharge alive: [     ] days  
(This will be calculated automatically when you enter dates online)

1.5 Date of death: [     /     /     ] (dd/mm/yyyy)

1.5i Or date of death not applicable ☐

1.5ii Time from stroke (or date of admission if not available) to death: [     ] days  
(This will be calculated automatically when you enter dates online)

1.6 Was the patient alive at 30 days after stroke? Yes ☐ No ☐ Not known ☐  
(If no enter date of death in Question 1.5)



**ADMISSION/DISCHARGE**

- 1.7 Do you have a copy of the ambulance clinicians' Patient records on file for this patient? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient did not arrive by ambulance.

- 1.7(i) If Yes: Does it include a validated tool to determine the diagnosis of stroke? Yes ☐ No ☐

- 1.8 Where was the patient initially admitted to?

Admissions/medical assessment unit/clinical decisions unit ☐  
 Coronary care unit ☐  
 Intensive care unit/High dependency unit ☐  
 Acute/combined stroke unit ☐  
 Other ward ☐

- 1.9 Was the patient treated in a Stroke Unit (or units) at any time during their stay? Yes ☐ No ☐

- 1.9i If yes, which type(s) of stroke unit did they spend time in? (Tick all that apply)

Acute stroke unit ☐  
 Rehabilitation stroke unit ☐  
 Combined stroke unit ☐

- 1.10 Was the patient admitted to an Acute or Combined stroke unit within 4 hours of arrival at hospital? Yes ☐ No ☐

- 1.11 Did the patient spend over 90% of their stay on a stroke unit? Yes ☐ No ☐

If no, where did the patient spend over 50% of their time?

Admissions/medical assessment unit ☐  
 Coronary Care Unit/Intensive Care Unit ☐  
 General/geriatric Ward ☐  
 Stroke Unit of any type (ie acute, rehab or combined) ☐  
 Generic Rehabilitation Unit (ie not a stroke rehab unit) ☐  
 Other ☐

Specify \_\_\_\_\_

- 1.12 Date of admission to stroke unit [     /     /     ] (dd/mm/yyyy)

- 1.13 Date of discharge from stroke unit [     /     /     ] (dd/mm/yyyy)

**SCAN**

- 1.14 Did the patient have a brain scan after the stroke? Yes ☐ No ☐ Not known ☐

If No: 1.14i Reason the patient did not have a scan:

Patient refused/unable to co-operate ☐  
 Palliative care ☐  
 Scan not routinely available ☐  
 Not considered clinically indicated ☐

If Yes: 1.14ii Date of first brain scan after the stroke [     /     /     ] (dd/mm/yyyy)

*\*Please make every effort to find the date and time of scan*

1.14iii Time of first brain scan after the stroke [     :     ] (HH:MM, 24 hr clock)

Not known ☐

1.14iv Has a brain scan been carried out within 24 hours of the stroke? Yes ☐ No ☐ Not known ☐

If No, reason the patient did not have a scan within 24 hours:

Patient refused/unable to co-operate ☐

Palliative care ☐

Scan not routinely available ☐

Not considered clinically indicated ☐

Patient did not arrive at hospital within 24 hours ☐

Other ☐

If other, specify \_\_\_\_\_

1.15 Following the scan what was the pathological diagnosis? (*If scan normal in the presence of stroke symptoms/signs then classify as infarction*)

Infarct ☐

Haemorrhage ☐

**SECTION 2 CASEMIX****CO-MORBIDITIES and RISK FACTORS**

2.1 Did the patient have any of the following co-morbidities prior to admission? Yes ☐ No ☐

2.1i If yes, please select all that apply

- |   |                          |
|---|--------------------------|
| Atrial fibrillation                                       | <input type="checkbox"/> |
| Previous stroke or TIA                                    | <input type="checkbox"/> |
| Diabetes mellitus   | <input type="checkbox"/> |
| Hyperlipidaemia (total cholesterol >5 or LDL >3.0 mmol/L) | <input type="checkbox"/> |
| Hypertension (systolic >140 or diastolic >85)             | <input type="checkbox"/> |
| Myocardial infarction or angina                           | <input type="checkbox"/> |
| Valvular heart disease (aortic or mitral valves)          | <input type="checkbox"/> |

2.2 Did the patient have any of the following risk factors? Yes ☐ No ☐

2.2i If yes, please select all that apply

- |   |                          |
|---|--------------------------|
| Current smoker  | <input type="checkbox"/> |
| Alcohol excess (no. of units per week > 14 for females, > 21 males) | <input type="checkbox"/> |

**PRE-ADMISSION**

2.3 Was the patient on the following medication before admission?

- |                               |                           |                          |
|-------------------------------|---------------------------|--------------------------|
| Any lipid lowering medication | Yes <input type="radio"/> | No <input type="radio"/> |
| Warfarin                      | Yes <input type="radio"/> | No <input type="radio"/> |
| Anti-platelet medication      | Yes <input type="radio"/> | No <input type="radio"/> |

2.4 Was the patient independent in everyday activities before the stroke? (e.g. Barthel 19-20, Rankin <3) Yes ☐ No ☐ Not known ☐

**DURING ADMISSION**

2.5 Did the patient have any of the following during the first 24 hours?

- |     |                |                           |                          |                                 |
|-----|----------------|---------------------------|--------------------------|---------------------------------|
| i   | Dysphasia      | Yes <input type="radio"/> | No <input type="radio"/> | Not known <input type="radio"/> |
| ii  | Dysarthria     | Yes <input type="radio"/> | No <input type="radio"/> | Not known <input type="radio"/> |
| iii | Motor deficits | Yes <input type="radio"/> | No <input type="radio"/> | Not known <input type="radio"/> |

2.6 Did the patient develop a urinary tract infection in the first 7 days of admission as defined by having a positive culture or clinically treated? Yes ☐ No ☐

2.7 Did the patient develop pneumonia during their admission after stroke? Yes ☐ No ☐

2.8 What was the worst level of consciousness at the time of maximum severity within the first 24 hours after stroke?

- |   |                       |
|---|-----------------------|
| Fully conscious                                 | <input type="radio"/> |
| Drowsy  | <input type="radio"/> |
| Semi-conscious (not fully rousable)             | <input type="radio"/> |
| Unconscious (responds to pain only/no response) | <input type="radio"/> |

2.9 On how many weekdays during the hospital stay were 45min of the following therapies appropriate for the patient to receive?: (where length of stay is greater than 20 workdays then just use the first 20 workdays)

- |      |                               |   |                                     |
|------|-------------------------------|---|-------------------------------------|
| i.   | Physiotherapy                 | <input type="text"/> Days                         | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |
| ii.  | Occupational Therapy          | <input type="text"/> Days                         | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |
| iii. | Speech and Language Therapy   | <input type="text"/> Days                         | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |

45 minutes of therapy is **NOT appropriate** if this particular therapy is not indicated for this patient, the patient declines this therapy input, the patient is unable to tolerate this amount of therapy e.g. because the patient has other medical problems (e.g. infections) or the patient is receiving end of life care.

The lack of availability of therapy staff is **NOT** a justifiable reason for not giving 45 minutes of therapy.

2.10 For those days in 2.9, what was the average number of minutes of daily face-to-face direct therapy?

- |      |                               |   |                                     |
|------|-------------------------------|---|-------------------------------------|
| ii.  | Physiotherapy                 | <input type="text"/> Minutes                      | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |
| ii.  | Occupational Therapy          | <input type="text"/> Minutes                      | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |
| iii. | Speech and Language Therapy   | <input type="text"/> Minutes                      | Not Known <input type="checkbox"/>  |
|      | How was this figure obtained? | Accurately from our records <input type="radio"/> | By estimating <input type="radio"/> |

*“Direct therapy” includes assessment and goal directed therapy given by qualified or non-registered therapy assistants on a face-to-face contact basis. It includes a patient being treated directly in a one-to-one or group setting, and carer training and home visits where patient is present. “Direct Therapy” does not include time for patient transport, documentation, environmental visits and MDTs).*

## 2.11 Dependency at discharge (using the Barthel ADL Functional Assessment Scale)

<b>Bowels</b>	0 = Incontinent (or needs to be given enemata) 1 = Occasional accident (once/week) 2 = Continent	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Bladder</b>	0 = Incontinent, or catheterised 1 = Occasional accident (max once per 24 hrs) 2 = Continent (over 7 days)	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Grooming</b>	0 = Needs help with personal care 1 = Independent face / hair / teeth / shaving (implements provided)	0 1	<input type="radio"/> <input type="radio"/>
<b>Toilet Use</b>	0 = Dependent 1 = Needs some help, can do something alone 2 = Independent (on and off, dressing / wiping)	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Feeding</b>	0 = Unable 1 = Needs help cutting, etc 2 = Independent (food in reach)	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Mobility</b>	0 = Immobile 1 = Wheelchair independent including corners etc. 2 = Walks with help of one person (verbal or physical) 3 = Independent (may use stick etc.)	0 1 2 3	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Transfer</b>	0 = Unable - no sitting balance 1 = Major help (one / two people) can sit 2 = Minor help (verbal or physical) 3 = Independent	0 1 2 3	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Dressing</b>	0 = Dependent 1 = Needs help, can do half unaided 2 = Independent (including buttons, zips, laces etc)	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Stairs</b>	0 = Unable 1 = Needs help (verbal or physical) 2 = Independent	0 1 2	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<b>Bathing</b>	0 = Dependent 1 = Independent	0 1	<input type="radio"/> <input type="radio"/>

Total [            ] (will only be calculated on website if all sections completed)

2.12 Was the patient newly institutionalised at discharge?      Yes ☐    No ☐    Not Known ☐

---

**SECTION 3 Standards within 72 hours**


---

**First 24 hours**

3.1 If the patient is alert and able to communicate, is there a formal assessment of?

- 3.1i Visual fields Yes ☐ No ☐ No but ☐  
 3.1ii Sensory testing Yes ☐ No ☐ No but ☐

Answer **No, but...** if: impaired level of consciousness/communication is documented.

3.2 Was the patient prescribed Alteplase (tPA) for stroke? Yes ☐ No ☐

If yes what date and time was alteplase started

- 3.2i Date [     /     /     ] (dd/mm/yyyy)  
 3.2ii Time [     :     ] (HH:MM, 24 hr clock)  
 3.2iii Was this as part of a randomised controlled trial? Yes ☐ No ☐

3.3 Has screening for swallowing disorders (not gag reflex) been specifically recorded in the first 4 hours? Yes ☐ No ☐ No but ☐

3.3(i) If No: Has it been recorded within the first 24 hours? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: impaired level of consciousness is documented.

**FIRST 48 HOURS**

3.4 Has the patient commenced aspirin or, where contraindicated, an alternative antiplatelet (e.g. clopidogrel) by 48 hours after stroke? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient is receiving palliative care; patient died; patient has intra-cerebral haemorrhage.

**FIRST 72 HOURS**

3.5 Has swallowing been assessed within 72 hours of admission (or of stroke if the stroke occurred in hospital) by a speech and language therapist or other professional trained in dysphagia assessment (i.e. not screening)?  
 Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient's swallowing is documented as normal; patient is still unconscious; patient died within 72 hours; patient is receiving palliative care.

3.6 Has the patient been assessed by a physiotherapist within 72 hours of admission (or of stroke if the stroke occurred in hospital)?  
 Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died within 72 hours; patient is receiving palliative care; patient has no motor deficit

## HYDRATION AND NUTRITION

- 3.7 Was the patient receiving fluids within 24 hours of stroke either orally, intravenously or parenterally? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient refused or patient receiving palliative care.

- 3.8 Was the patient receiving nutrition within 72 hours of admission? Yes ☐ No ☐ No but ☐  
*NB This means nutrition and not simple IV fluids eg Dextrose solution*

Answer **No, but...** if: patient refused or patient receiving palliative care.

3.8i If yes, which of the following methods was used? (tick all that apply)

- Oral ☐  
 Nasogastric/PEG ☐  
 Parenteral ☐

- 3.9 Was the patient screened for malnutrition using a malnutrition screening tool (e.g. Malnutrition Universal Screening Tool)? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient receiving palliative care; patient died.

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## SECTION 4 Standards within 7 days

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### Within seven days

- 4.1 Has there been an initial assessment of communication problems by the speech and language therapist within 7 days of admission (or of stroke if the stroke occurred in hospital)? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died within 7 days; the patient was still unconscious; it is documented that the patient had no communication problems; patient is receiving palliative care.

- 4.2 Was the patient assessed by an occupational therapist within 4 working days of admission (or of stroke if the stroke occurred in hospital)? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died within 4 working days; the patient was still unconscious; it is documented that the patient had no difficulties performing everyday activities; patient is receiving palliative care.

### If No or No, but,

- 4.2i Was the patient assessed by an occupational therapist within 7 days of admission (or of stroke if the stroke occurred in hospital)? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died within 7 days; the patient was still unconscious; it is documented that the patient had no difficulties performing everyday activities; patient is receiving palliative care.

4.3 Did the patient have *an indwelling* urinary catheter in the first week after admission? Yes ☐ No ☐

4.3i If yes, which of the following have been documented as the reason for urinary catheterisation?

Please select all that apply

- a. ☐ urinary retention
- b. ☐ pre-existing catheter
- c. ☐ urinary incontinence
- d. ☐ need for accurate fluid balance monitoring
- e. ☐ critical skin care
- f. ☐ not documented
- g. ☐ other please specify \_\_\_\_\_

4.4 Is there a plan to promote urinary continence? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient is continent; patient died within 7 days; patient is unconscious; patient is receiving palliative care.

4.5 Is there written evidence of rehabilitation goals agreed by all relevant members of the specialist rehabilitation team within 5 days of admission? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died, patient receiving palliative care, patient discharged within 5 days.

4.5i If no, have rehabilitation goals been agreed by the multi-disciplinary team by discharge? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died / discharged within 7 days; patients is receiving palliative care.



## SECTION 5 BY DISCHARGE

5.1 Is there evidence that the patient was weighed at least once during admission? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died within 7 days; patient unconscious or receiving palliative care.

5.2 Is there evidence in the multidisciplinary notes of a social work assessment within 7 days of referral? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient not referred to Social Worker; patient died within 7 days; or patient refused.

5.3 Is there evidence that the patient's mood has been assessed? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient unconscious throughout, discharged within 4 days or patient died within 7 days.

5.4 Is there evidence that the patient's cognitive status has been assessed? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient unconscious throughout; or patient died within 7 days, or receiving palliative care.

## SECTION 6 RISK FACTORS AND SECONDARY PREVENTION

### STROKE RISK FACTORS DEFINED AT DISCHARGE

6.1 Has there been a documented discussion about the following risk factors with the patient and/or carer? Yes ☐ No ☐ No but ☐

- i. Smoking cessation
- ii. Alcohol reduction
- iii. Exercise
- iv. Diet

☐ ☐ ☐  
☐ ☐ ☐  
☐ ☐ ☐  
☐ ☐ ☐

Answer **No, but...** if: patient did not have any of the associated risk factors; patient died; remained profoundly impaired.

6.2 Which treatment(s) was the patient on at discharge?

(Tick all that apply.)

Antihypertensives	Antiplatelet/thrombotic	Lipid lowering treatment
Any antihypertensive <input type="checkbox"/>	Aspirin <input type="checkbox"/>	Statin <input type="checkbox"/>
None <input type="checkbox"/>	Clopidogrel <input type="checkbox"/>	Other <input type="checkbox"/>
	Dipyridamole MR <input type="checkbox"/>	None <input type="checkbox"/>
	Warfarin/other anticoagulant <input type="checkbox"/>	
	Warfarin/other anticoagulant planned within next month <input type="checkbox"/>	
	Other <input type="checkbox"/>	
	None <input type="checkbox"/>	

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**SECTION 7 Patient Communication and Research**


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**COMMUNICATION**

7.1 Is there documented evidence that there has been a discussion with the patient about:

	Yes	No	No but
i. Diagnosis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Prognosis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer **No, but...** if: patient unconscious throughout or died or has severe receptive or cognitive difficulties.

7.2 Is there documented evidence that advice has been given about driving Yes ☐ No ☐ No but ☐

Answer **No but...** if: patient unconscious throughout or died or did not drive before the stroke.

7.3 Were the carer's needs for support assessed separately? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: it was documented that there was no carer; patient died.

7.4 Is there evidence that the skills required to care for the patient at home were taught? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: patient died; patient discharged to institutional care; it is documented that the carer is not participating in the patient's care; patient was self-caring by discharge.

7.5 Was discharge organised involving the use of an early supported discharge scheme? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: the patient was not suitable for an ESD scheme; if the patient was sent to another hospital/institution; or was functionally competent; or there was no change in functional ability from before stroke; patient died; or patient or carer refused.

7.6 Was the patient planned to receive rehabilitation following discharge? Yes ☐ No ☐ No but ☐

Answer **No but...** if: the patient was sent to another hospital/institution; or was functionally competent; or there was no change in functional ability from before stroke; patient died; or patient or carer refused.

7.7 Is there documented evidence of a follow up appointment with a member of the stroke team at approximately 6 weeks post discharge? Yes ☐ No ☐ No but ☐

Answer **No, but...** if: the patient was moving out of area; patient refusing follow up; patient died.

## RESEARCH

- 7.8 Is this patient in a clinical stroke related research study with formal research ethics committee approval where they (or a relative) have given written consent/assent? Yes ☐ No ☐

### Notes:

**This section is for you to clarify your answers to any questions. Identify the question number(s) which apply to each comment. (Online version allows you to enter comments next to each individual question)**

## APPENDIX 3

### Reliability analyses: 2010 National Sentinel Stroke Audit

Reliability (agreement between auditors) is not the same as validity (accuracy of measure). However, establishing good agreement between auditors is an important part of the process of validation as valid data by definition will have to be reliable.

For categorical data, the kappa statistic was used to measure agreement. Kappa values of 0.41 to 0.60 are said to indicate moderate levels of agreement, values of 0.61 – 0.80 indicate good agreement whilst values of over 0.80 are very good. We also used the McNemar test for matched binary data to detect any difference between the earlier and later auditors in their preference for answering one way or another. Personal preferences will tend to even out over all the participating sites so significant results here should indicate where it is easier or more difficult to find the answer to a given question once some more time has elapsed.

Two kappas are given, one overall for the whole sample and one after excluding cases where data were missing or the auditors did not agree on whether the patient was eligible for the question (principally through differential use of the “No But...” option). This is because the overall kappa scores of each data item give an assessment of agreement which is an amalgamation of two separate components. One is the agreement between auditors as to whether or not they found the required information, and the other is the agreement in the answers given by auditors when both have found the information. This latter aspect is summarised separately by the second kappa shown in the tables below. For mandatory questions in which eligibility is not an issue, such as gender, the two kappa values will be the same.

The advantage of kappa is that it measures the agreement in excess of the amount we would expect by chance. 0 means no better than chance, 1 means perfect agreement. In practice any value of kappa much below 0.50 will indicate inadequate agreement. We are looking for kappa values of above 0.60 and preferably over 0.80. The kappa statistic measures agreement but cannot indicate the nature of disagreement between auditors.

For continuous data, such as those relating to dates, the difference between the two values has been calculated with the agreement summarised by the percentage of cases which agree to within certain thresholds.

#### Summary

Sites were asked to re-audit their first 5 cases, using a different auditor. 130 sites submitted 594 pairs of cases. Because this audit again used web-based data entry, data completeness was again very high.

Median kappa scores, taken across all the questions with categorical answers, were 0.81 (IQR 0.72 – 0.88, n=104 questions, see Figure C1 below) including data for the whole sample and 0.80 (IQR 0.75 – 0.88, n=104 questions, see figure C2 below) once disagreements on eligibility are set aside. This is a good level of agreement and the fact that the two values are similar shows how there is generally no more or less agreement on whether the patient is eligible than on what the actual answer is. This may reflect random errors, typos and the like, but the range of kappas for particular questions shows that some questions are clearly more difficult to answer decisively than others. Figure C3 shows that some questions have greatly improved reliability once issues of eligibility of individual patients are set aside (and therefore the problem lies in deciding eligibility) while others have the opposite problem;

these roughly balance each other out over the dataset, explaining the similar medians given above.

The results are only a slight improvement on the 2008 audit's median of 0.77; most questions' kappas have asymptotic standard errors around 0.05 so, given the variation between questions, the difference can be seen to be within the realm of chance variation between the years.

Kappa levels were generally highest for patient characteristics questions, but no section was noticeably lower than all others.

Section	Number of categorical questions	Median kappa over all patients	Median kappa over patients agreed as eligible
0+1	20	0.85	0.85
2	32	0.85	0.80
3	14	0.75	0.78
4	13	0.76	0.76
5	4	0.75	0.72
6	12	0.76	0.82
7	9	0.74	0.79

Figure C1

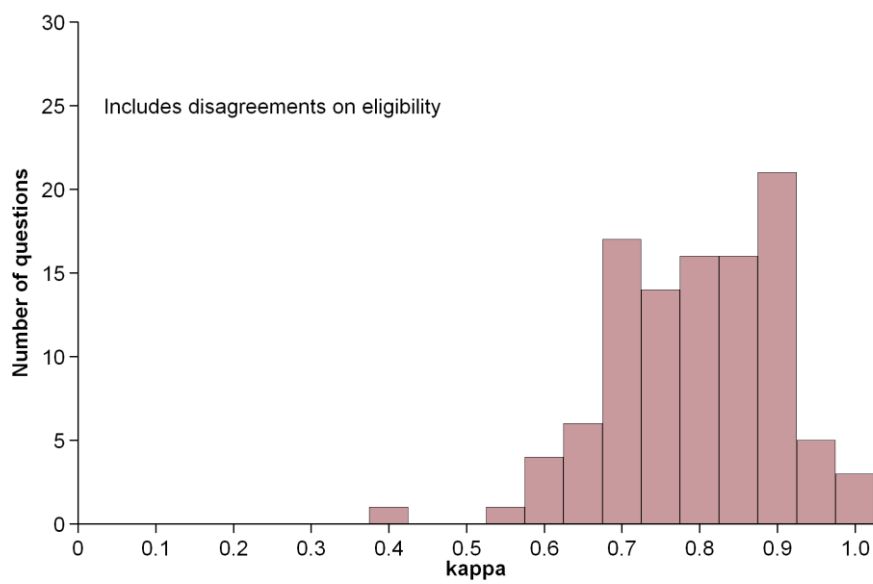


Figure C2

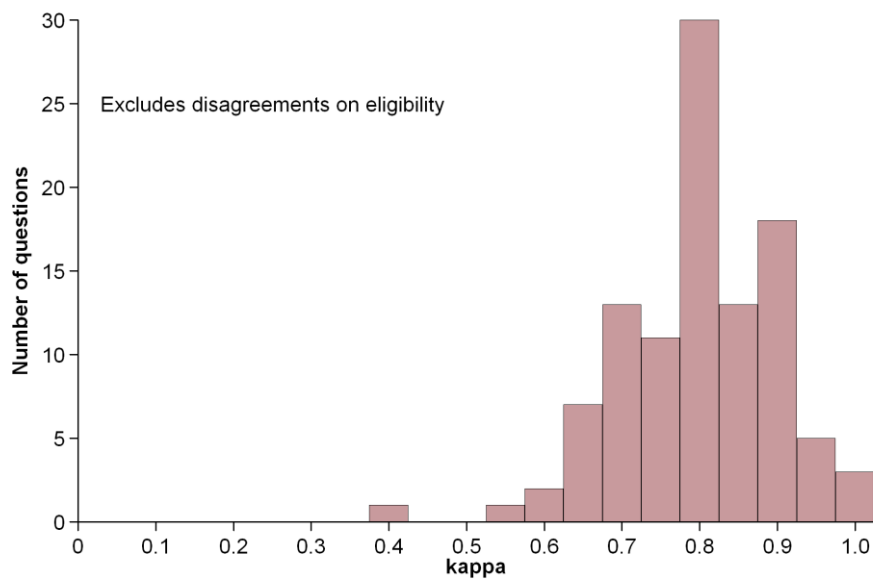
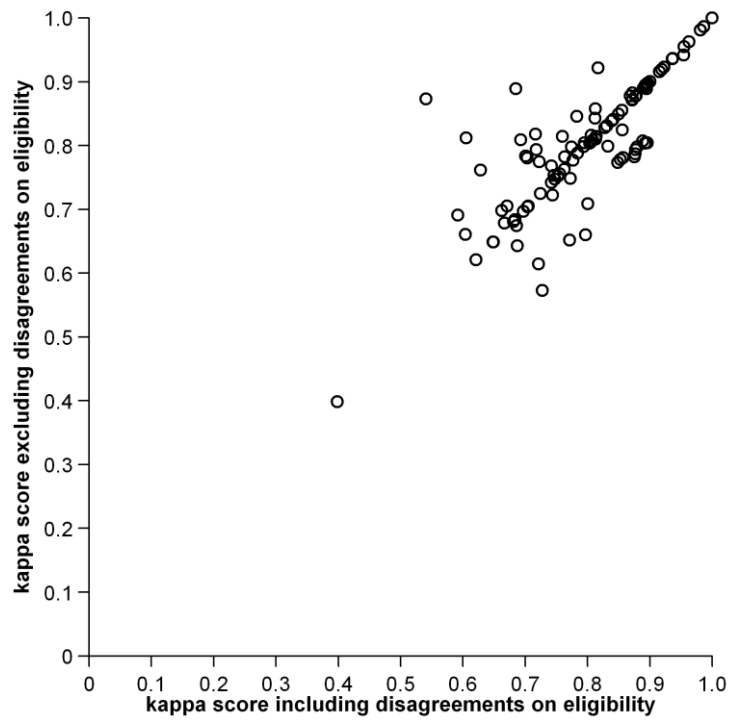


Figure C3





	Continuous:  Description of agreement	Categorical:  Kappa score for disagreements on answers	Categorical:  Kappa score for disagreements on answers and eligibility	Categorical:  McNemar test p value
B2 Date of birth	96% to the day			
B3 Gender		0.99	0.99	0.63
B4 Was the patient already an inpatient at the time of stroke?		0.84	0.84	1.00
1.1 Date of stroke	91% to the day, 98% within 3 days			
1.1 Accuracy of date		0.68	0.68	0.13
1.1i Accuracy of time		0.59	0.69	0.03
1.2 Admission date	97% to the day, 99% within 1 day			
1.3 Did the patient die whilst still an inpatient?		0.98	0.98	0.63
1.3i Patient status		1.00	1.00	1.00
1.4 Discharge date	95% to the day, 98% within 5 days			
1.4i Length of stay to discharge alive	91% to the day, 97% within 5 days			
1.5 Date of death	97% to the day			
1.6 Was the patient alive at 30 days after stroke?		0.92	0.92	1.00
1.7 Do you have a copy of the ambulance clinicians' Patient records on file for this patient?		0.81	0.81	0.03
1.7i If Yes: Does it include a validated tool to determine the diagnosis of stroke?		0.61	0.81	0.47
1.8 Where was the patient initially admitted to?		0.85	0.85	1.00
1.9 Was the patient treated in a Stroke Unit (or units) at any time during their stay?		0.92	0.92	0.01
1.9i Acute stroke unit		0.89	0.90	0.44
1.9i Rehabilitation stroke unit		0.81	0.86	0.34
1.9i Combined stroke unit		0.90	0.90	0.85
1.10 Was the patient admitted to an Acute or Combined stroke unit within 4 hours of arrival at hospital?		0.81	0.84	0.66
1.11 Did the patient spend over 90% of their stay on a stroke unit?		0.84	0.84	0.03

Continuous:	Categorical:	Categorical:	Categorical:	Continuous:
	Description of agreement	Kappa score for disagreements on answers	Kappa score for disagreements on answers and eligibility	McNemar test p value
1.11 If no, where did the patient spend over 50% of their time?		0.79	0.80	1.00
1.12 Stroke unit admission date	91% to the day, 98% within 1 day			
1.13 Stroke unit discharge date	93% to the day, 96% within 3 days			
1.14 Did the patient have a brain scan after the stroke?		0.88	0.88	1.00
1.14 Date of scan	96% to the day, 99% within 1 day			
1.14iv Has a brain scan been carried out within 24 hours of the stroke?		0.78	0.79	0.65
1.15 Following the scan what was the pathological diagnosis?		0.95	0.94	1.00
2.1 Did the patient have any of the following co-morbidities prior to admission?		0.81	0.81	1.00
Atrial fibrillation		0.86	0.86	0.58
Previous stroke or TIA		0.89	0.89	0.34
Diabetes mellitus		0.96	0.96	0.07
Hyperlipidaemia (total cholesterol >5 or LDL >3.0 mmol/L)		0.75	0.75	0.53
Hypertension (systolic >140 or diastolic >85)		0.78	0.78	0.53
Myocardial infarction or angina		0.83	0.83	0.72
Valvular heart disease (aortic or mitral valves)		0.70	0.70	1.00
2.2 Did the patient have any of the following risk factors?		0.87	0.87	1.00
Current smoker		0.89	0.89	0.33
Alcohol excess (no. of units per week >14 for females, >21 males)		0.81	0.81	0.61
2.3 Was the patient on the following medication before admission?				
Any lipid lowering medication		0.90	0.90	1.00
Warfarin		0.94	0.94	0.69
Anti-platelet medication		0.92	0.92	0.69

Continuous:	Categorical: Description of agreement	Categorical: Kappa score for disagreements on answers	Categorical: Kappa score for disagreements on answers and eligibility	Continuous: McNemar test p value
2.4 Was the patient independent in everyday activities before the stroke?		0.76	0.76	0.19
2.5 Did the patient have any of the following during the first 24 hours?				
Dysphasia		0.72	0.72	0.30
Dysarthria		0.65	0.65	0.50
Motor deficits		0.65	0.65	0.90
2.6 Did the patient develop a urinary tract infection in the first 7 days of admission as defined by having a positive culture or clinically treated?		0.68	0.68	0.33
2.7 Did the patient develop pneumonia during their admission after stroke?		0.80	0.80	1.00
2.8 What was the worst level of consciousness at the time of maximum severity within the first 24 hours after stroke?		0.75	0.75	1.00
2.9 On how many weekdays during the hospital stay were 45min of the following therapies appropriate for the patient to receive?				
Physiotherapy	85% to the day, 96% within 3 days			
Occupational Therapy	87% to the day, 96% within 3 days			
Speech and Language Therapy	92% to the day, 98% within 3 days			
2.10 For those days in 2.9, what was the average number of minutes of daily face-to-face direct therapy?				
Physiotherapy	84% to the minute, 95% within 20 minutes			

Continuous:	Categorical: Description of agreement	Categorical: Kappa score for disagreements on answers	Categorical: Kappa score for disagreements on answers and eligibility	Continuous: McNemar test p value
Occupational Therapy	85% to the minute, 94% within 20 minutes			
Speech and Language Therapy	91% to the minute, 95% within 20 minutes			
2.11 Bowels		0.88	0.78	1.00
2.11 Bladder		0.89	0.80	1.00
2.11 Grooming		0.90	0.80	0.44
2.11 Toilet use		0.88	0.80	0.45
2.11 Feeding		0.88	0.79	0.27
2.11 Mobility		0.89	0.81	0.39
2.11 Transfer		0.85	0.77	0.82
2.11 Dressing		0.86	0.78	1.00
2.11 Stairs		0.85	0.78	0.10
2.11 Bathing		0.88	0.79	0.24
2.11 Total	76% exact agreement, 95% within 3 points			
2.12 Was the patient newly institutionalised at discharge?		0.82	0.92	0.81
3.1 If the patient is alert and able to communicate, is there a formal assessment of?				
3.1i Visual fields		0.74	0.77	0.06
3.1ii Sensory testing		0.72	0.61	0.85
3.2 Was the patient prescribed Alteplase (tPA) for stroke?		0.94	0.94	1.00
3.2 Date of Alteplase	100% agreement			
3.3 Has screening for swallowing disorders (not gag reflex) been specifically recorded in the first 4 hours?		0.72	0.77	0.33
3.3i If No: Has it been recorded within the first 24 hours?		0.76	0.81	0.81
3.4 Has the patient commenced aspirin or, where contraindicated, an alternative antiplatelet (e.g. clopidogrel) by 48 hours after stroke?		0.77	0.65	0.85

Continuous:	Categorical:	Categorical:	Categorical:	Continuous:
	Description of agreement	Kappa score for disagreements on answers	Kappa score for disagreements on answers and eligibility	McNemar test p value
3.5 Has swallowing been assessed within 72 hours of admission (or of stroke if the stroke occurred in hospital) by a speech and language therapist or other professional trained in dysphagia assessment (i.e. not screening)?		0.70	0.78	0.80
3.6 Has the patient been assessed by a physiotherapist within 72 hours of admission (or of stroke if the stroke occurred in hospital)?		0.76	0.78	0.17
3.7 Was the patient receiving fluids within 24 hours of stroke either orally, intravenously or parenterally?		0.60	0.66	0.13
3.8 Was the patient receiving nutrition within 72 hours of admission?		0.86	0.82	0.55
3.8i Oral		0.87	0.88	0.34
3.8i Nasogastric		0.89	0.89	0.51
3.8i Parenteral		0.54	0.87	0.38
3.9 Was the patient screened for malnutrition using a malnutrition screening tool (e.g. Malnutrition Universal Screening Tool)?		0.69	0.67	0.13
4.1 Has there been an initial assessment of communication problems by the speech and language therapist within 7 days of admission (or of stroke if the stroke occurred in hospital)?		0.77	0.80	0.79
4.2 Was the patient assessed by an occupational therapist within 4 working days of admission (or of stroke if the stroke occurred in hospital)?		0.80	0.80	0.70
4.2i Was the patient assessed by an occupational therapist within 7 days of admission (or of stroke if the stroke occurred in hospital)?		0.87	0.88	1.00

Continuous:	Categorical:	Categorical:	Categorical:	Continuous:
	Description of agreement	Kappa score for disagreements on answers	Kappa score for disagreements on answers and eligibility	McNemar test p value
4.3 Did the patient have an indwelling urinary catheter in the first week after admission?		0.87	0.87	0.70
a. urinary retention		0.81	0.81	0.55
b. pre-existing catheter		0.90	0.90	0.50
c. urinary incontinence		0.74	0.74	0.34
d. need for accurate fluid balance monitoring		0.71	0.71	0.09
e. critical skin care		0.76	0.76	0.45
f. not documented		0.62	0.62	0.75
4.4 Is there a plan to promote urinary continence?		0.67	0.68	0.65
4.5 Is there written evidence of rehabilitation goals agreed by all relevant members of the specialist rehabilitation team within 5 days of admission?		0.75	0.75	0.41
4.5i If no, have rehabilitation goals been agreed by the multi-disciplinary team by discharge?		0.67	0.71	0.73
5.1 Is there evidence that the patient was weighed at least once during admission?		0.81	0.82	0.50
5.2 Is there evidence in the multidisciplinary notes of a social work assessment within 7 days of referral?		0.66	0.70	0.82
5.3 Is there evidence that the patient's mood has been assessed?		0.77	0.75	0.75
5.4 Is there evidence that the patient's cognitive status has been assessed?		0.73	0.57	0.14
6.1 Has there been a documented discussion about the following risk factors with the patient and/or carer?				
i. Smoking cessation		0.69	0.64	0.42
ii. Alcohol reduction		0.63	0.76	0.07
iii. Exercise		0.69	0.81	1.00
iv. Diet		0.70	0.78	0.66

Continuous:	Categorical:	Categorical:	Categorical:	Continuous:
	Description of agreement	Kappa score for disagreements on answers	Kappa score for disagreements on answers and eligibility	McNemar test p value
6.2 Which treatment(s) was the patient on at discharge?				
Antihypertensives		0.83	0.83	0.49
Aspirin		0.89	0.89	1.00
Clopidogrel		0.96	0.96	1.00
Dipyridamole MR		0.89	0.89	0.83
Warfarin/other anticoagulant		0.84	0.84	0.04
Warfarin/other anticoagulant planned within next month		0.68	0.68	0.73
Other antihypertensive		0.40	0.40	1.00
Statin		0.88	0.88	0.80
7.1 Is there documented evidence that there has been a discussion with the patient about:				
i. Diagnosis		0.80	0.66	0.09
ii. Prognosis		0.80	0.71	0.07
7.2 Is there documented evidence that advice has been given about driving		0.78	0.85	1.00
7.3 Were the carer's needs for support assessed separately?		0.72	0.79	0.55
7.4 Is there evidence that the skills required to care for the patient at home were taught?		0.72	0.82	0.38
7.5 Was discharge organised involving the use of an early supported discharge scheme?		0.69	0.89	0.29
7.6 Was the patient planned to receive rehabilitation following discharge?		0.74	0.72	0.75
7.7 Is there documented evidence of a follow up appointment with a member of the stroke team at approximately 6 weeks post discharge?		0.83	0.80	0.34
7.8 Is this patient in a clinical stroke related research study with formal research ethics committee approval where they (or a relative) have given written consent/assent?		0.70	0.70	0.30

## APPENDIX 4 – Participating Trusts by SHA

### East Midlands

Chesterfield Royal Hospital NHS Foundation Trust  
Derby Hospitals NHS Foundation Trust  
Kettering General Hospital NHS Foundation Trust  
Northampton General Hospital NHS Trust  
Nottingham University Hospitals NHS Trust  
Sherwood Forest Hospitals NHS Foundation Trust  
United Lincolnshire Hospitals NHS Trust (3 Sites)  
University Hospitals of Leicester NHS Trust in collaboration with Leicestershire County and Rutland PCT

### East of England

Basildon and Thurrock University Hospitals NHS Foundation Trust  
Bedford Hospital NHS Trust  
Cambridge University Hospitals NHS Foundation Trust  
Colchester Hospital University NHS Foundation Trust  
East & North Hertfordshire NHS Trust  
Hinchingbrooke Health Care NHS Trust  
Ipswich Hospital NHS Trust  
James Paget University Hospitals NHS Foundation Trust  
Luton and Dunstable Hospital NHS Foundation Trust  
Mid Essex Hospital Services NHS Trust  
Norfolk & Norwich University Hospitals NHS Foundation Trust  
Peterborough and Stamford Hospitals NHS Foundation Trust  
Princess Alexandra Hospital NHS Trust  
Queen Elizabeth Hospital King's Lynn NHS Trust  
Southend University Hospital NHS Foundation Trust  
West Hertfordshire Hospitals NHS Trust  
West Suffolk Hospital NHS Trust

### London

Barking Havering and Redbridge Hospitals NHS Foundation Trust  
Barnet and Chase Farm Hospitals NHS Trust  
Barts and The London NHS Trust jointly with Tower Hamlets PCT  
Chelsea and Westminster Hospital NHS Foundation Trust  
Epsom and St Helier University Hospitals NHS Trust (2 Sites)  
Guy's and St Thomas' Hospital NHS Foundation Trust  
Hillingdon Hospital NHS Trust  
Homerton University Hospital NHS Foundation Trust  
Imperial College Healthcare NHS Trust  
King's College Hospital NHS Foundation Trust  
Kingston Hospital NHS Trust  
Lewisham Healthcare NHS Trust  
Croydon Health Services NHS Trust  
Newham University Hospital NHS Trust  
North Middlesex  
University Hospital NHS Trust & Haringey PCT combined  
North West London Hospitals NHS Trust  
Royal Free Hampstead NHS Trust  
South London Healthcare NHS Trust  
St George's Healthcare NHS Trust  
University College London Hospitals NHS Foundation Trust  
West Middlesex University Hospital NHS Trust  
Whipps Cross University Hospital NHS Trust

### North East

City Hospitals Sunderland NHS Foundation Trust  
County Durham and Darlington NHS Foundation Trust (2 sites)  
Gateshead Health NHS Foundation Trust  
Newcastle upon Tyne Hospitals NHS Foundation Trust  
North Tees and Hartlepool NHS Foundation Trust (2 sites)  
Northumbria Healthcare NHS Foundation Trust (3 Sites)  
South Tees Hospitals NHS Foundation Trust (2 sites)  
South Tyneside NHS Foundation Trust

### North West

Aintree University Hospitals NHS Foundation Trust  
Blackpool, Fylde & Wyre Hospitals NHS Foundation Trust  
Central Manchester and Manchester Children's University Hospital NHS Trust  
Countess of Chester Hospital NHS Foundation Trust  
East Cheshire NHS Trust  
East Lancashire Hospitals NHS Trust  
Lancashire Teaching Hospitals NHS Foundation Trust (2 Sites)  
Mid Cheshire Hospitals NHS Foundation Trust  
Trust  
North Cumbria University Hospitals NHS Trust (2 Sites)  
Pennine Acute Hospitals NHS Trust (3 Sites)  
Royal Bolton Hospital NHS Foundation Trust  
Royal Liverpool & Broadgreen University Hospitals NHS Trust  
Salford Royal NHS Foundation Trust  
Southport and Ormskirk Hospital NHS Trust  
St Helens & Knowsley Hospitals NHS Trust  
Stockport NHS Foundation Trust  
Tameside Hospital NHS Foundation Trust in collaboration with NHS Tameside and Glossop  
Trafford Healthcare NHS Trust  
University Hospital of South Manchester NHS Foundation Trust  
University Hospitals of Morecambe Bay NHS Foundation Trust (2 Sites)  
Warrington and Halton Hospitals NHS Foundation Trust  
Wirral University Teaching Hospital NHS Foundation Trust  
Wrightington, Wigan and Leigh NHS Foundation Trust

### South Central

Basingstoke and North Hampshire NHS Foundation Trust  
Buckinghamshire Healthcare NHS Trust  
Heatherwood and Wexham Park Hospitals NHS Foundation Trust  
Isle of Wight NHS Primary Care Trust  
Milton Keynes Hospital NHS Foundation Trust  
Oxford Radcliffe Hospitals NHS Trust (2 Sites)  
Portsmouth Hospitals NHS Trust jointly with Hampshire and Portsmouth City PCTs  
Royal Berkshire NHS Foundation Trust  
Southampton University Hospitals NHS Trust in collaboration with Hampshire PCT & Southampton City PCT  
Winchester and Eastleigh Healthcare NHS Trust



## APPENDIX 4 – Participating Trusts by SHA

### South East Coast

Ashford and St Peter's Hospital NHS Trust  
 Brighton & Sussex University Hospitals NHS Trust (2 Sites)  
 Dartford & Gravesham NHS Trust  
 East Kent Hospitals University NHS Foundation Trust (3 Sites)  
 East Sussex Hospitals NHS Trust (2 Sites)  
 Frimley Park Hospital NHS Foundation Trust  
 Maidstone and Tunbridge Wells NHS Trust (2 Sites)  
 Medway NHS Foundation Trust, Medway PCT and Swale PCT  
 Royal Surrey County Hospital NHS Foundation Trust  
 Surrey & Sussex Healthcare NHS Trust  
 Western Sussex Hospitals NHS Trust (2 Sites)

### South West

Dorset County Hospital NHS Foundation Trust  
 Gloucestershire Hospitals NHS Foundation Trust (2 sites)  
 Great Western Hospitals NHS Foundation Trust (in collaboration with Swindon PCT)  
 North Bristol NHS Trust  
 Northern Devon Healthcare NHS Trust in collaboration with North Devon Primary Care Trust  
 Plymouth Hospitals NHS Trust in collaboration with Plymouth PCT  
 Poole Hospital NHS Foundation Trust  
 Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust  
 Royal Cornwall Hospitals NHS Trust  
 Royal Devon and Exeter NHS Foundation Trust in collaboration with Devon Primary Care Trust  
 Royal United Hospital Bath NHS Trust in collaboration with Bath & North East Somerset PCT and Wiltshire PCT  
 Salisbury NHS Foundation Trust  
 South Devon Healthcare NHS Foundation Trust combined with Devon PCT  
 Taunton and Somerset NHS Foundation Trust  
 University Hospitals Bristol NHS Foundation Trust  
 Weston Area Health NHS Trust  
 Yeovil District Hospital NHS Foundation Trust

### West Midlands

Burton Hospitals NHS Foundation Trust  
 Dudley Group of Hospitals NHS Foundation Trust  
 George Eliot Hospital NHS Trust  
 Heart of England NHS Foundation Trust (2 Sites)  
 Hereford Hospitals NHS Trust  
 Royal Wolverhampton Hospitals NHS Trust jointly with Wolverhampton Health Care NHS Trust  
 Sandwell and West Birmingham Hospitals NHS Trust (2 Sites)  
 Shrewsbury & Telford Hospital NHS Trust  
 South Warwickshire Hospitals NHS Foundation Trust  
 University Hospital of North Staffordshire NHS Trust combined with North Staffordshire Combined Healthcare NHS Trust  
 University Hospitals Birmingham NHS Foundation Trust in collaboration with South Birmingham Primary Care Trust  
 University Hospitals Coventry and Warwickshire NHS Trust  
 Walsall Hospitals NHS Trust  
 Worcestershire Acute Hospitals NHS Trust (2 Sites)

### Yorkshire and the Humber

Airedale NHS Trust  
 Barnsley Hospital NHS Foundation Trust  
 Bradford Teaching Hospitals NHS Foundation Trust  
 Calderdale and Huddersfield NHS Foundation Trust  
 Doncaster and Bassetlaw Hospitals NHS Foundation Trust (2 Sites)  
 Harrogate and District NHS Foundation Trust  
 Hull and East Yorkshire Hospitals NHS Trust  
 Leeds Teaching Hospitals NHS Trust  
 Mid Yorkshire Hospitals NHS Trust  
 Northern Lincolnshire and Goole Hospitals NHS Foundation Trust (2 Sites)  
 Rotherham NHS Foundation Trust  
 Scarborough and North East Yorkshire Healthcare NHS Trust  
 Sheffield Teaching Hospitals NHS Foundation Trust  
 York Hospitals NHS Foundation Trust

<b>Islands</b>	Health & Social Services Department Isle of Man Department of Health and Social Security States of Jersey Health & Social Services
<b>N Ireland</b>	Belfast Health and Social Care Trust (3 Sites) Northern Health and Social Care Trust (2 Sites) South Eastern Health and Social Care Trust (3 Sites) Southern Health and Social Care Trust (2 Sites) Western Health and Social Care Trust (2 Sites)
<b>Wales</b>	Abertawe Bro Morgannwg University Health Board (2 Sites) Aneurin Bevan Health Board (2 Sites) Betsi Cadwaladr University Health Board (3 Sites) Cardiff and Vale University Health Board (2 Sites) Cym Taf Health Board (2 Sites) Hywel Dda Health Board (4 Sites)